Third Edition

Agnew and Pasewark

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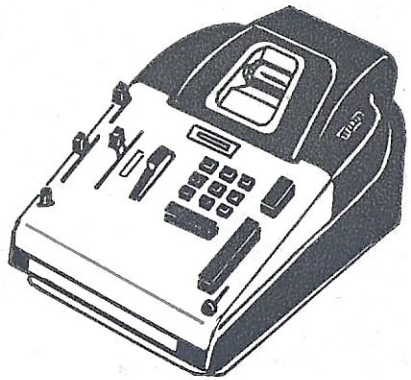

Ten-Key

ADDING – LISTING MACHINE AND PRINTING CALCULATOR COURSE

M67

TEN-KEY ADDING-LISTING MACHINE and PRINTING CALCULATOR COURSE

Third Edition
for

Standard Manual
Standard Electric
Automatic Multiplier
Printing Calculator

by
Peter L. Agnew
and
William R. Pasewark

Published by
SOUTH-WESTERN PUBLISHING COMPANY

CINCINNATI 27 NEW ROCHELLE, N. Y. CHICAGO 44 DALLAS 2 BURLINGAME, CALIF.

M67

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FOREWORD

Ten-key adding-listing machines and printing calculators are being used more and more throughout the country. Many other machines used in offices have a keyboard similar to that of a ten-key adding-listing machine. The student who develops the touch system on ten-key adding-listing machines can use the same system for other office machines with a similar keyboard.

Two main features of ten-key adding-listing machines are:

1. It is possible to operate the machine using a touch system as is done with a typewriter. The touch system makes it unnecessary for the operator to look back and forth from his original copy to the keyboard of the machine.
2. Most of the numbers and calculations entered into the machine are printed on a piece of paper called a "tape." This tape is used to check the accuracy of the work and can be retained for future reference.

This course was developed after a detailed study of ten-key adding-listing machines sold in the United States. The course includes the following features:

1. Instructional material for many different kinds of ten-key adding-listing machines is included. In fact, nearly all machines manufactured in the United States are represented.
2. Instruction is included for the four major types of ten-key adding-listing machines: standard manuals, standard electrics, automatic multipliers, and printing calculators.
3. The four fundamental arithmetic processes (addition, subtraction, multiplication, and division) are presented. Special instruction in these four processes is given where there are special applications to any of the four major types of machines mentioned in the preceding paragraph.
4. Three- and four-digit numbers are emphasized, but there is drill material for wider column numbers.
5. The touch system is introduced in the first job and is developed and reviewed in subsequent jobs.
6. To improve speed and accuracy, warm-up drills are presented at the beginning of most jobs.
7. Emphasis is on production. Each job includes a timed drill and there are six speed drills. The highest degree of efficiency usually results when students are constantly pushing ahead for speed and then pulling back for accuracy.
8. The student makes computations from many business forms that are frequently used with ten-key adding-listing machines.
9. Handwritten numbers are used in several jobs throughout the book.
10. Teaching materials have been carefully planned for the student's convenience while learning and the teacher's convenience while checking results. For example, the spiral binding on the book makes it easy to handle while working at the machine and answer columns are aligned at the right of the page for easy grading.
11. Problems may be removed when completed, but the instructional material and repetitive drills remain in the book for future reference.
12. The book is as self-instructional as possible. Instructions are presented in an easy-to-follow, step-by-step plan. The teacher is free to supervise class work and to give assistance where it is needed.
13. In Job No. 25, the problems emphasize drill on specific numbers. The student can get the maximum amount of concentrated practice in reaches to and from each key. This material may also be used for remedial work when students evidence a weakness in striking specific keys.
14. A well-planned testing program is provided. The course has 30 jobs, 27 of which are found in this book and three of which are provided separately for use as tests.

Upon completion of this course, the average student should have developed a high degree of ability in operating the ten-key machine. If there is not sufficient time to complete the entire book, it is usually best to complete every other problem in each job.

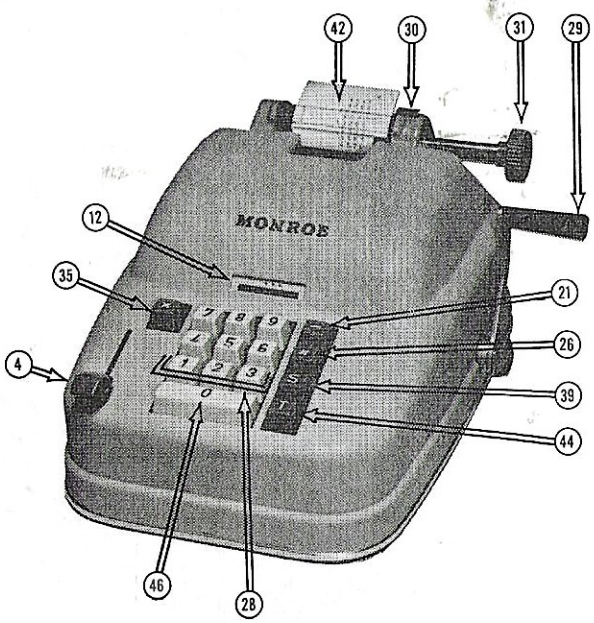
The authors appreciate the illustrations and personal assistance provided by cooperative representatives of the many machine manufacturers.

P. L. A.
W. R. P.

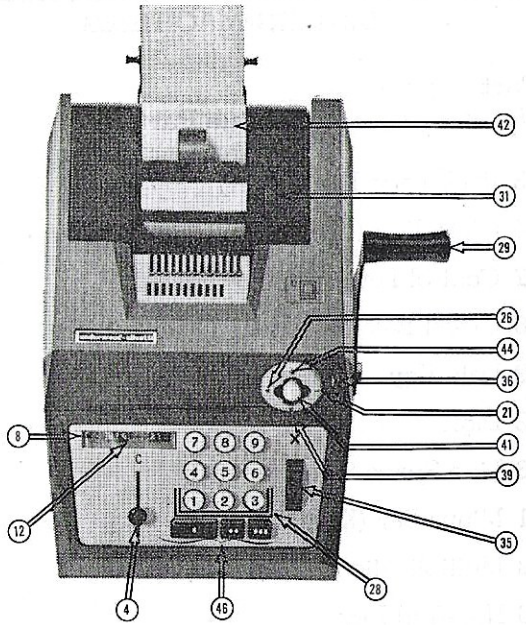
STANDARD MANUAL TEN-KEY ADDING-LISTING MACHINES

Part No.	Machine Part
3	Backspace Key (Lever)
4	Clear Key (Lever)
8	Credit Balance Signal
12	Digit Indicator
21	Minus Bar (Key)
26	Non-Add Key
28	Numeral Keys
29	Operating Handle
30	Paper Release Lever
31	Platen Knob
34	Release Key
35	Repeat Key
36	Repeat Subtract Key
39	Subtotal Key
40	Subtotal Lock
41	Switch
42	Tape
44	Total Bar (Key)
46	Zero Key(s)

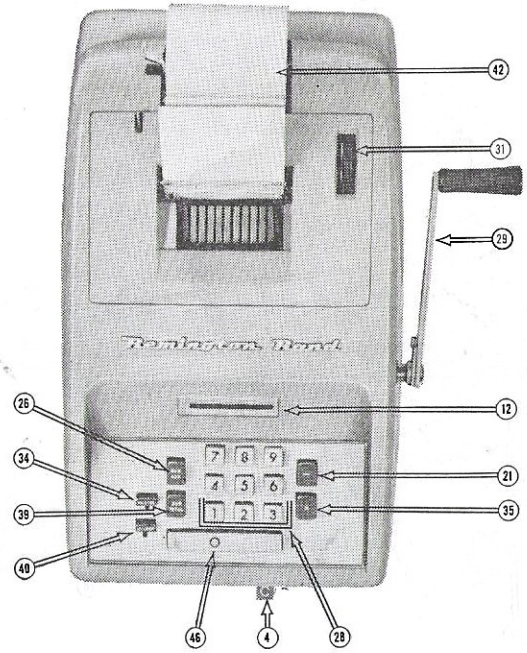
STANDARD MANUAL TEN-KEY ADDING-LISTING MACHINES



Monroe



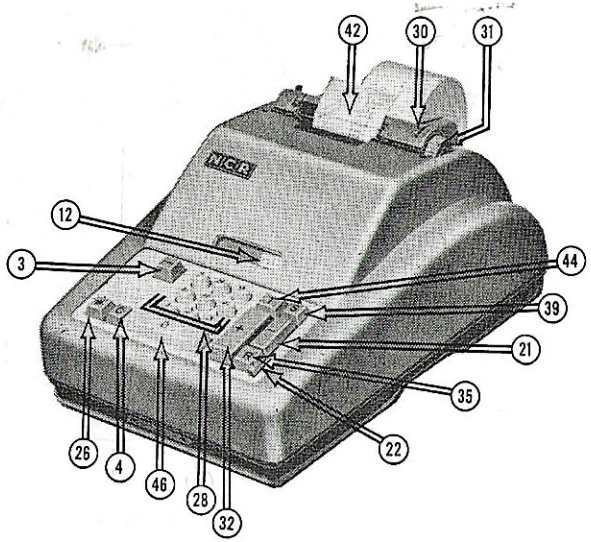
Olivetti, Underwood, and Underwood-Olivetti



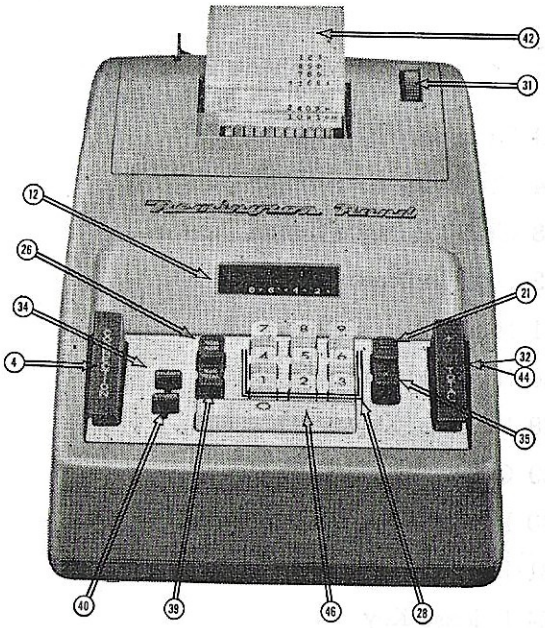
Remington Rand

STANDARD ELECTRIC TEN-KEY ADDING-LISTING MACHINES

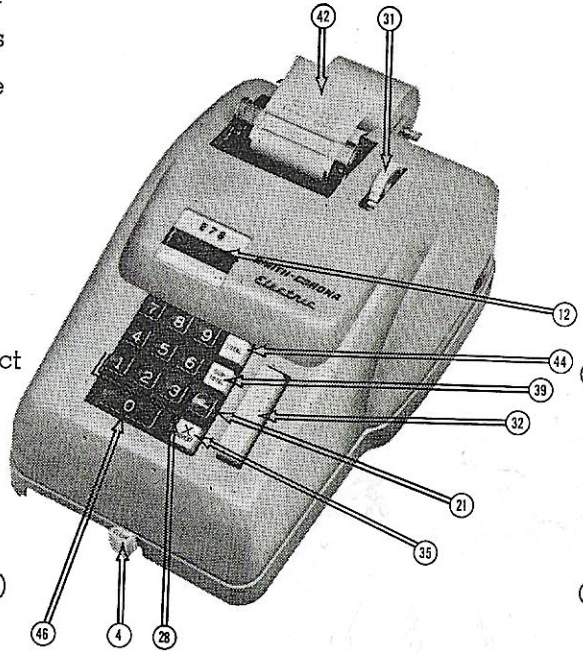
Part No.	Machine Part
3	Backspace Key (Lever)
4	Clear Key (Lever)
7	Control Lever
8	Credit Balance Signal
9	Date Key
12	Digit Indicator
16	Line Space Selector
21	Minus Bar (Key)
22	Multiplication Key (Lever)
26	Non-Add Key
27	Non-Print Key
28	Numeral Keys
30	Paper Release Lever
31	Platen Knob
32	Plus Bar
34	Release Key
35	Repeat Key
36	Repeat Subtract Key
39	Subtotal Key
40	Subtotal Lock
42	Tape
44	Total Bar (Key)
46	Zero Key(s)



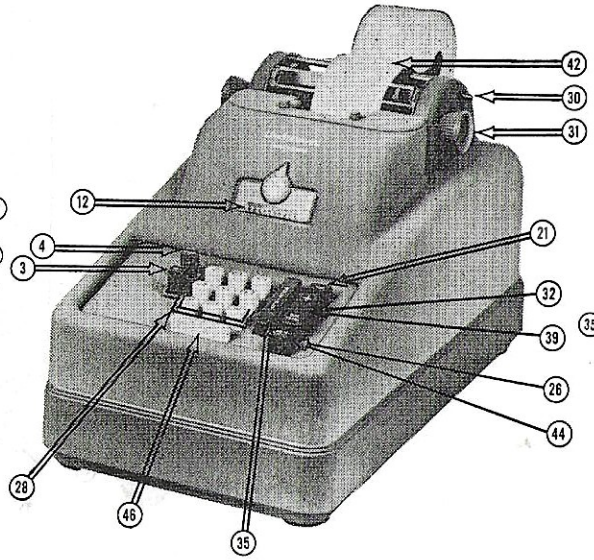
National Cash Register



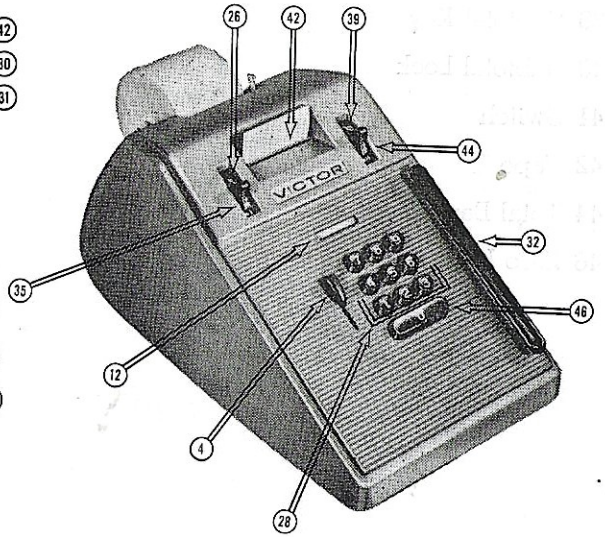
Remington Rand



Smith-Corona

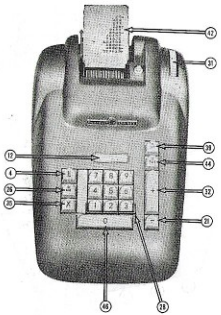


Underwood Sundstrand

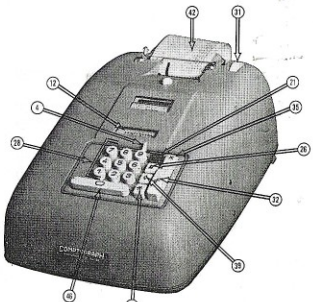


Victor

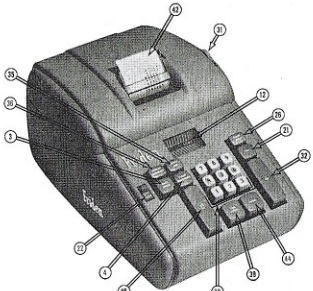
STANDARD ELECTRIC TEN-KEY ADDING-LISTING MACHINES



Burroughs



Comptograph



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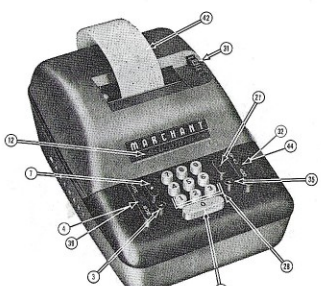
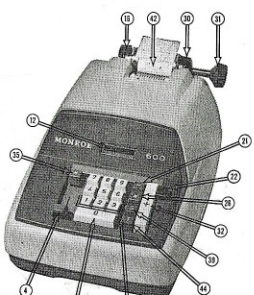
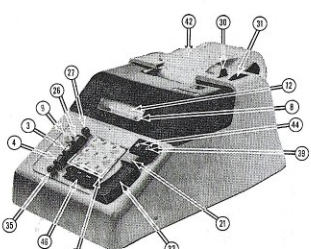


Marchant



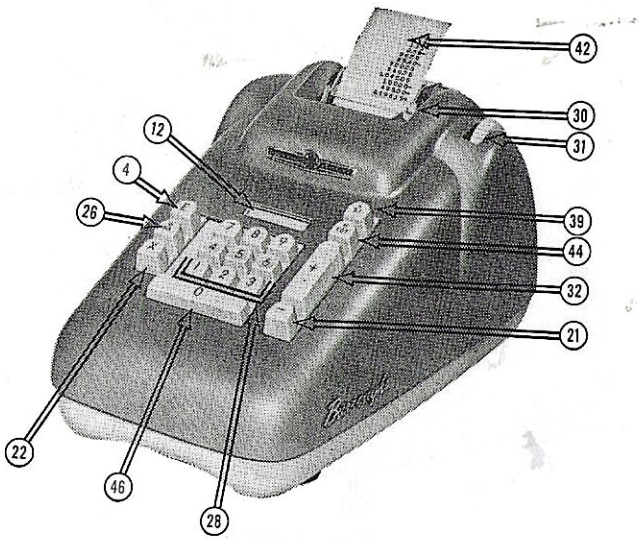
Monroe



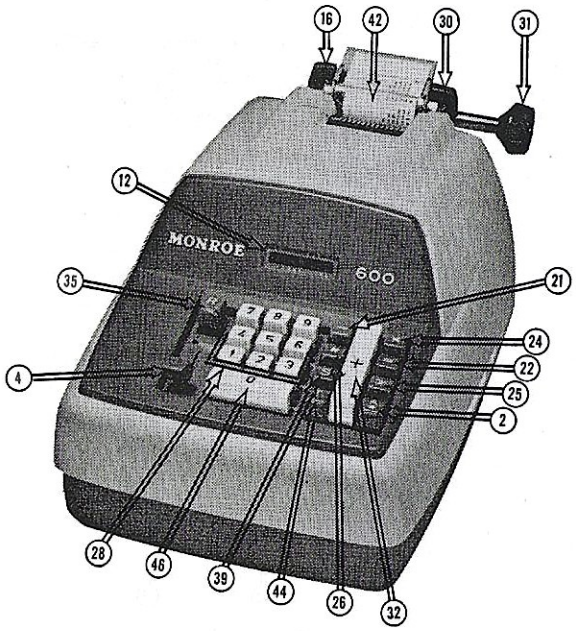
Olivetti, Underwood, and Underwood-Olivetti

Part No.	Machine Part
2	Automatic Total Key (Lever)
3	Backspace Key (Lever)
4	Clear Key (Lever)
5	Constant Key
7	Control Lever
8	Credit Balance Signal
9	Date Key
12	Digit Indicator
16	Line Space Selector
21	Minus Bar (Key)
22	Multiplication Key (Lever)
24	Multiplier Key (Lever, Wheel) (located at upper left side on Burroughs)
25	Negative Multiplication Key
26	Non-Add Key
27	Non-Print Key
28	Numeral Keys
30	Paper Release Lever
31	Platen Knob
32	Plus Bar
35	Repeat Key
38	Stop Key
39	Subtotal Key
42	Tape
44	Total Bar (Key)
45	Transfer Key
46	Zero Key(s)

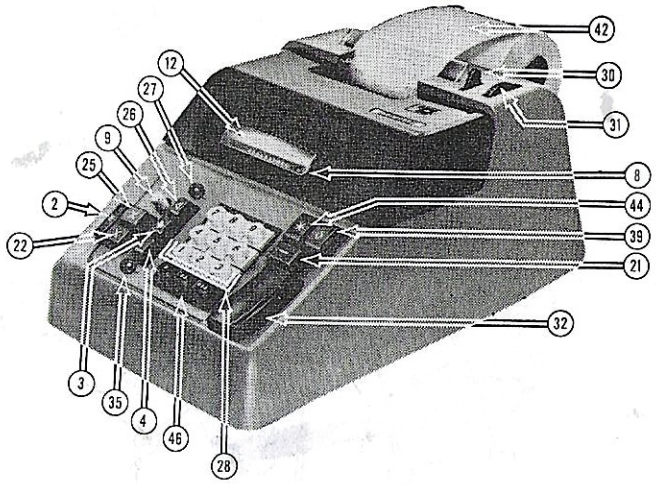
AUTOMATIC MULTIPLIERS



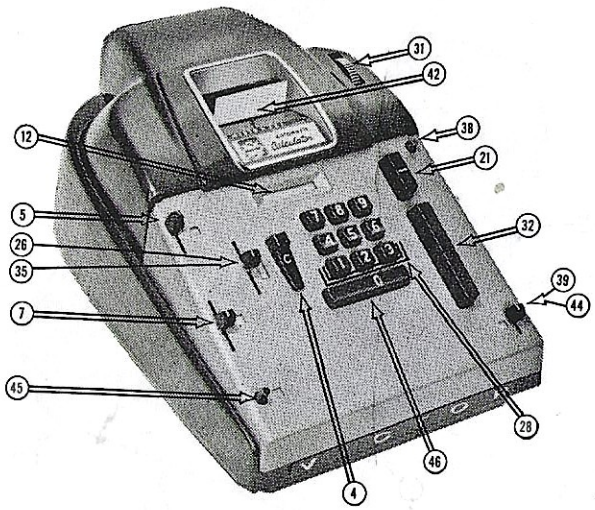
Burroughs



Monroe



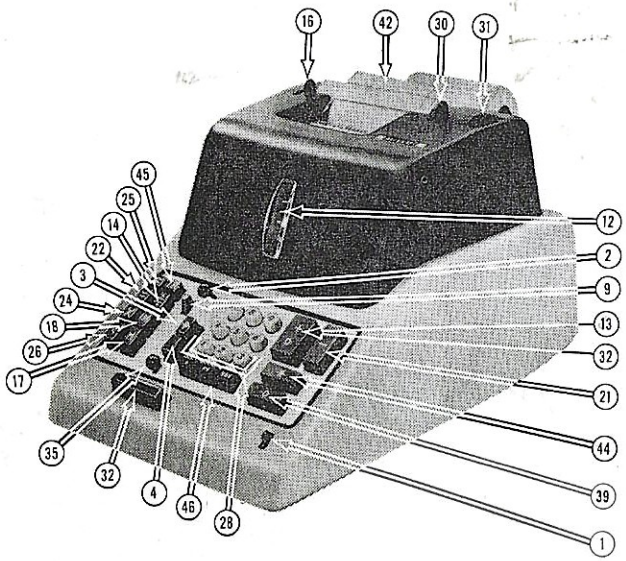
Olivetti, Underwood, and Underwood-Olivetti



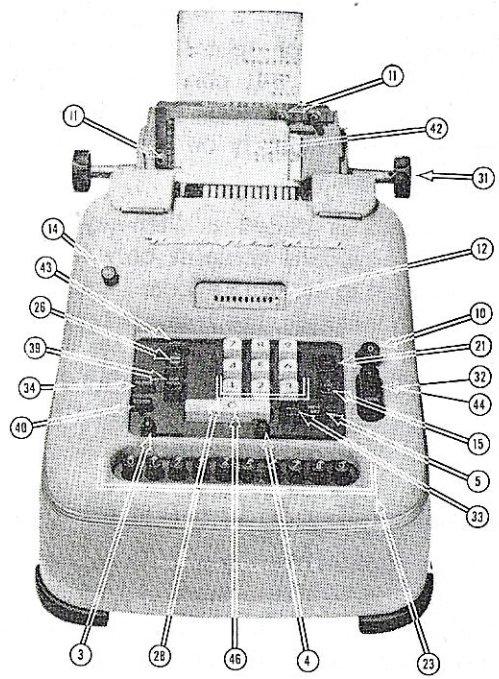
Victor

Part No.	Machine Part
1	Automatic Subtotal Lever
2	Automatic Total Key (Lever)
3	Backspace Key (Lever)
4	Clear Key (Lever)
5	Constant Key
6	Constant Lock Lever (located at lower right-hand side of machine)
9	Date Key
10	Decimal Key
11	Decimal Point
12	Digit Indicator
13	Dividend Key
14	Division Key
15	Extend Key
16	Line Space Selector
17	Memory Key
18	Memory Input Key
21	Minus Bar (Key)
22	Multiplication Key (Lever)
23	Multiplication Keyboard
24	Multiplier Key (Lever, Wheel)
25	Negative Multiplication Key
26	Non-Add Key
28	Numeral Keys
30	Paper Release Lever
31	Platen Knob
32	Plus Bar
33	Positioning Key
34	Release Key
35	Repeat Key
38	Stop Key
39	Subtotal Key (Lever)
40	Subtotal Lock
42	Tape
43	Total Control Key
44	Total Bar (Key)
45	Transfer Key
46	Zero Key(s)

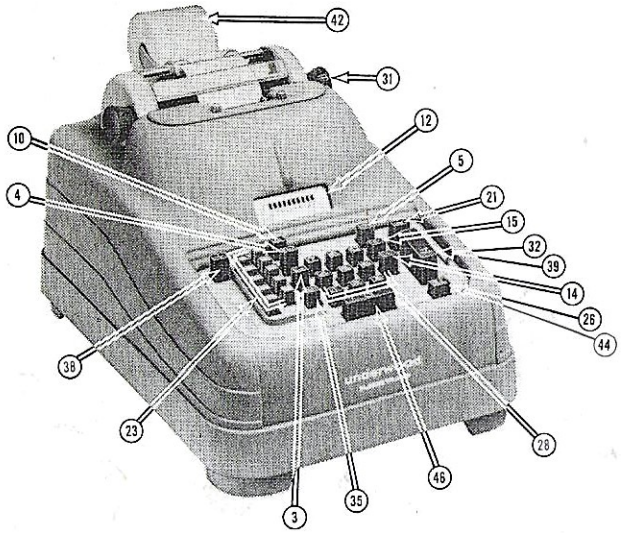
PRINTING CALCULATORS



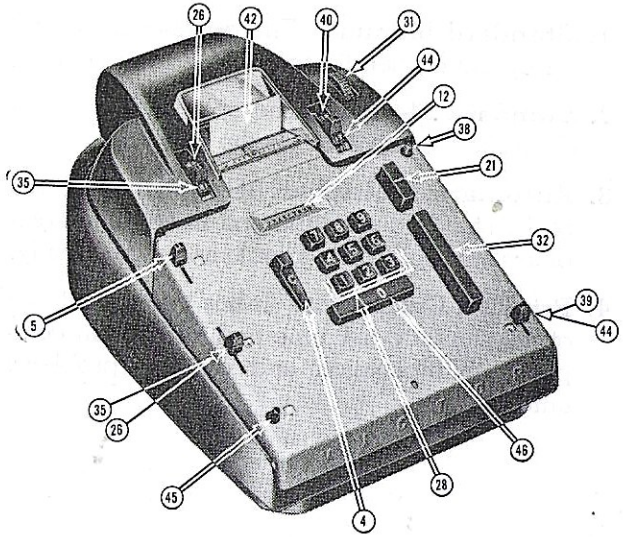
Olivetti, Underwood, and Underwood-Olivetti



Remington Rand



Underwood Sundstrand



Victor

Ten-Key Adding-Listing Machines

The unique feature of a ten-key adding-listing machine is its ease of operation in adding and subtracting numbers. It can also multiply and divide, but frequently these operations can be performed more efficiently on other types of calculating machines.

The machine is called a "ten-key" machine because the keyboard contains only ten number keys in contrast to the full-keyboard (multiple-key) adding-listing machine, the keyboard of which has several rows of keys from 1 to 9. It is called a "listing" machine because it lists numbers on a strip of paper called a "tape."

Types of Ten-Key Adding-Listing Machines

Many companies manufacture ten-key adding-listing machines. While these machines are not identical, they are so similar that an operator who learns one can operate the others.

There are four main types of ten-key adding-listing machines:

1. **Standard Manual.** The operator must pull an operating handle to activate the machine.
2. **Standard Electric.** The operator strikes an electrified key to activate the machine.
3. **Automatic Multiplier.** It has all the features of the standard machine and in addition completes multiplication problems automatically.
4. **Printing Calculator.** It has all the features of the standard machine and in addition completes multiplication and division problems automatically.

Correct Position at Machine

1 TOUCH ADDITION

4 to 9 Keys

Find the illustration of your machine on pages v–ix. If the machine you are operating varies somewhat from the illustrations, ask your instructor to explain its features. Instructions in this book will refer to your machine by name.

1. Preparation

a. If your machine is operated electrically, connect it to an electrical outlet.

b. Place this book on the desk in the same position as paper for writing with a pen or pencil.

c. Place the machine to the right of your book in a position that allows you the greatest freedom of finger movement over the keyboard.

d. Sit in a comfortable, erect position with your feet flat on the floor.

2. Clear your machine.

a. If your machine has a Repeat Key (Lever) ㊱* and it is engaged, release it.

b. If the Digit Indicator ⑫ shows that there is a number entered on the keyboard, operate the Clear Bar (Key, Lever) ④.

c. Clear the register. Clearing the register is the same as taking a total. The register is a mechanism inside the machine that accumulates numbers entered from the keyboard.

Electric Machines

Strike the Total Bar (Key) ㊹ with the right little finger. If a total symbol does not appear on the tape, strike the Total Bar (Key) a second time. A total symbol will print with or without a number on the tape to indicate the machine is clear.

*Use the encircled numbers to locate the parts of your machine from the illustrations on pages v–ix.

JOB No. 1
TOUCH ADDITION
4 to 9 Keys

Name _____ **No. of Errors** _____

Period _____ **Date** _____ **Rating** _____

Correct Position at Machine

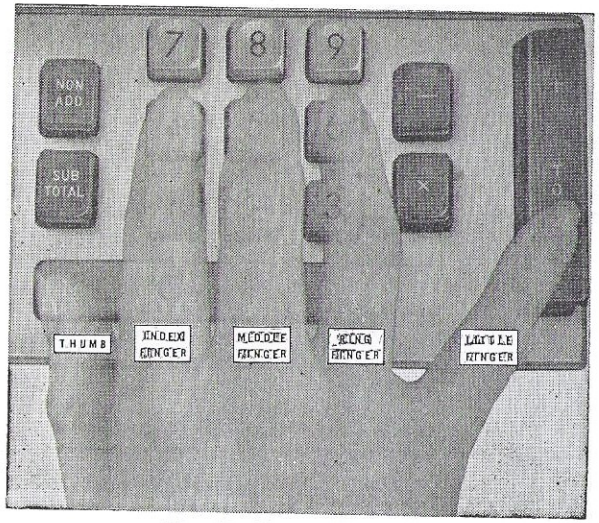
Clear or Total

Manufacturer	Keyboard of Machine	Symbol on Tape
Burroughs	*Tot	.00*
Comptograph	*	*
Friden	Total	C
Marchant	Total Add	.00T
Monroe	T	*
National Cash Register	T	△ or *
Olivetti, Underwood, or Underwood-Olivetti	*	* < or *
	T	*
Remington Rand	+Total	*
Underwood Sundstrand	No+Total	⌑
Victor	T	.00T

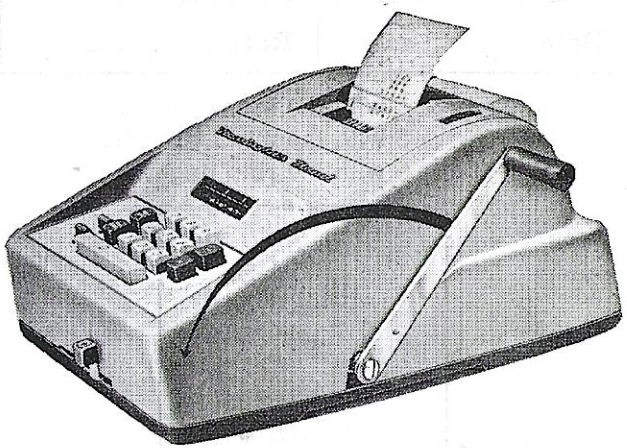
Strike 4 with the index finger.
Strike 5 with the middle finger.
Strike 6 with the ring finger.

*
4.56
6.54
5.64
4.56
6.54
5.64
4.56
6.54
5.64
6.54
5.46
4.56
66.78*

Problem (1)



Use the Touch Method.
Do Not Look at the Keyboard.



Pull the Operating Handle Toward You.

(1)	(2)
4.56	6.54
6.54	4.56
5.64	5.64
4.56	6.54
6.54	4.65
5.64	6.54
4.56	5.64
6.54	6.54
5.64	5.64
6.54	4.56
5.46	5.46
4.56	4.56
66.78	66.87

Answers	
1	
2	
3	
4	
5	
6	

4.5-6
4.5
1.1

(3)	(4)	(5)	(6)
4.65	4.65	4.65	5.64
5.64	6.54	6.54	6.54
6.54	4.56	5.64	5.64
4.65	5.64	4.65	5.46
6.54	6.54	6.54	4.56
5.64	4.65	5.64	6.54
4.65	6.54	4.65	5.46
6.54	5.64	6.54	5.64
5.46	6.54	5.46	4.56
6.54	5.64	6.54	4.56
5.64	4.56	5.64	6.54
6.45	5.46	6.54	5.64
68.94	66.96	69.03	66.78

Manual Machines

(1) **Monroe**

(a) Pull the Operating Handle ㉙ toward you as far as possible.

(b) As you release the Operating Handle, depress the Total Key ㊹.

(c) Again pull the Operating Handle toward you as far as possible and release it.

(2) **Remington Rand**

(a) Pull the Operating Handle ㉙ toward you as far as possible and release it.

(b) Again pull the Operating Handle toward you as far as possible and release it.

(3) **Olivetti, Underwood, or Underwood-Olivetti**

(a) Move the Switch ㊶ to the Total Position ㊹.

(b) Pull the Operating Handle ㉙ forward as far as possible and release it.

(4) **Underwood Sundstrand**

(a) Pull the Operating Handle ㉙ toward you as far as possible and release it.

(b) Again pull the Operating Handle toward you as far as possible. At the bottom of the stroke depress the Total Key ㊹ and release the Operating Handle.

The total symbol will print on the tape with or without a number to indicate the machine is clear.

3. Enter numbers using the touch method.

a. Curve your fingers and place your right index finger on the 4 key, middle finger on the 5 key, and ring finger on the 6 key.

The 4, 5, and 6 keys are your "home row." Notice that these keys are slightly concave so you can identify them by touch. Do not look at the keyboard of your machine.

b. Strike digits of the number in the same order they would be written with a pencil and paper, from left to right. A digit is any figure from 0 to 9. In the number 376, 3, 7, and 6 are digits.

376
Units digit
Tens digit
Hundreds digit

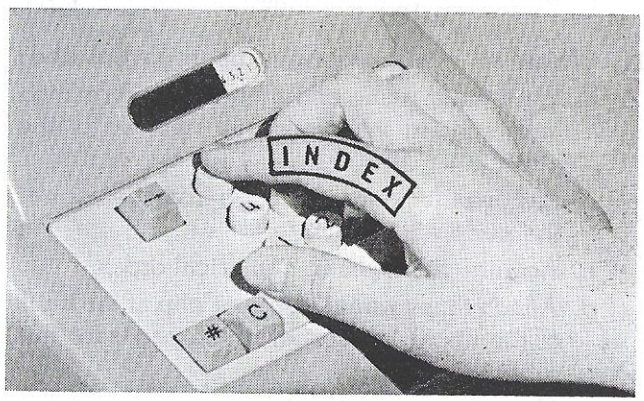
c. Strike the keys one at a time, never simultaneously.

d. Strike the keys with a firm quick stroke.

4. Transfer numbers to the tape.

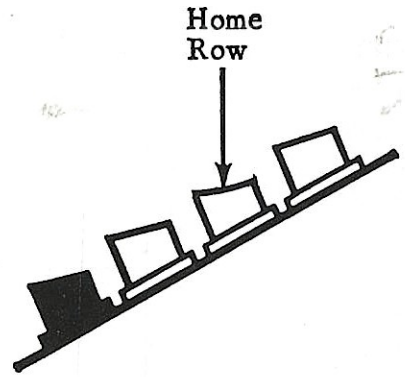
a. **Electric.** Strike the Plus Bar ㉜.

b. **Manual.** Pull the Operating Handle ㉙ forward as far as possible and release it.



Strike the 7 Key with the Index Finger.

Name_____



The "Home Row" Keys (4, 5, and 6) Are Concave.

(7)	(8)
5.65	5.65
4.56	4.65
5.45	4.64
4.64	6.56
6.54	5.46
4.54	6.46
6.65	4.54
5.56	5.46
4.54	4.56
4.45	6.56
5.64	5.45
5.54	4.65
63.76	64.64

Answers

7	
8	
9	
10	
11	
12	

Strike 7 with the index finger.

(9)	(10)	(11)	(12)
7.45	6.57	5.67	7.65
4.57	6.75	6.74	6.75
5.67	5.67	7.45	5.76
4.57	6.74	4.75	7.56
7.45	5.74	4.57	7.65
4.75	7.54	5.74	5.67
4.57	5.47	7.54	6.74
5.74	5.76	5.47	5.76
7.54	6.74	5.67	6.75
5.47	7.56	6.75	6.57
5.76	5.67	6.57	7.56
6.75	6.74	7.56	7.65
70.29	76.95	74.48	82.07

Strike 8 with the middle finger.

(13)	(14)	(15)	(16)
8.56	4.58	5.78	4.85
5.86	5.48	4.78	5.86
6.48	6.48	6.87	7.84
5.86	5.68	7.68	8.47
6.85	4.68	8.76	7.56
5.48	6.58	4.87	6.74
6.48	8.54	5.87	4.75
5.86	5.84	7.85	5.67
6.85	6.84	8.57	4.56
4.85	4.86	6.87	8.56
5.48	6.85	7.58	5.47
6.58	6.48	8.56	4.67
74.99	67.77	84.04	75.00

Strike 9 with the ring finger.

(17)	(18)	(19)	(20)
6.95	4.59	8.97	9.45
5.96	6.79	6.49	8.94
9.65	8.69	7.69	4.79
4.59	4.79	8.49	9.57
5.69	6.49	4.59	6.79
6.95	8.59	8.96	7.89
8.96	7.59	6.59	9.68
5.89	6.59	5.49	4.89
5.86	5.69	8.69	9.74
6.59	4.69	6.89	8.94
8.59	7.49	4.69	7.49
6.95	9.54	8.59	5.69
76.45	64.75	81.99	99.86

Answers

13
14
15
16
17
18
19
20

5. **Correcting errors.** See instructions on page 14.

6. **Repeat Steps 3 and 4** until all numbers for the problem have been entered in the machine.

7. **Take a total.** After all the numbers of a problem have been printed on the tape, take a total, following the instructions in Step 2c on page 1. Taking a total is the same as clearing the machine.

8. **Write the answer directly below the problem.**

9. **Do the problem a second time.**
   a. If the second answer is the same as the first, write it in the space at the right of the page and proceed to the next problem.
   b. If the second answer is different from the first, write the second answer directly below the first and do the problem a third time. Write the answer that proves to be correct at the right of the page and proceed to the next problem.

10. **Tapes**
    a. When the tape becomes as long as this page, tear it off.
    b. Write the problem numbers on the tape.

11. **When all problems have been completed:**
    a. Write your name and any other information called for in the upper right corner of the page.
    b. Remove the pages in the job from the book at the perforation mark.
    c. Arrange the tapes in numerical order.
    d. Attach tapes with a staple or clip at the back of the upper left corner of the pages for this job.
    e. Give the completed job to your instructor.

2 TOUCH ADDITION
0 to 3 Keys
NON-ADD

Punctuation, such as commas and periods, divides the words of a sentence into natural groups by forcing the reader to pause. This makes it easier to understand a sentence. Punctuation marks in a number (commas and decimals) break up the number into natural groups. For example:

Number	Read as
4.15	"four point one five"
2,639.27	"two thousand six thirty-nine point twenty-seven"
49,734	"forty-nine thousand seven thirty-four"

To Complete Problems (1) to (16):

1. Clear the machine.
2. List numbers using the touch method.
   a. Curve your fingers slightly. Strike keys sharply for digits of the number in the same order they would be written with a pencil and paper, from left to right.
   b. Strike the
      1 key with the index finger
      2 key with the middle finger
      3 key with the ring finger
      0 key with the thumb
   c. Do not look at the keyboard of your machine. The 4, 5, and 6 keys are concave so you can distinguish them by touch.
   d. Strike the keys individually, never simultaneously.
3. Transfer numbers to the tape.
4. Take a total.

JOB No. 2
TOUCH ADDITION
0 to 3 Keys
NON-ADD

Name _____ Period _____ Date _____

No. of Errors _____ Rating _____

Strike 1 with the index finger.

(1)	(2)	(3)	(4)
4.15	8.41	1.98	5.91
7.41	4.19	9.16	6.51
5.71	9.41	1.96	5.18
1.54	1.49	1.94	5.16
8.41	8.16	8.51	1.59
4.51	7.61	1.64	9.51
7.51	1.97	5.61	5.18
8.71	7.41	4.18	1.78
5.71	8.17	8.15	4.16
4.81	1.67	4.71	1.67
1.84	1.74	7.51	1.54
7.18	5.14	9.15	6.71
62.49	65.37	64.50	54.91

Answers

1	
2	
3	
4	
5	
6	
7	
8	

1.59
.15
1.44

Strike 2 with the middle finger.

(5)	(6)	(7)	(8)
4.27	7.26	1.26	5.26
5.92	7.52	2.46	2.45
2.91	5.29	7.62	5.28
6.42	6.29	1.27	9.52
4.62	2.49	8.42	2.54
2.96	2.71	6.21	5.21
6.27	7.92	2.41	1.62
6.25	5.28	1.42	5.29
8.52	8.29	2.74	5.12
9.82	8.72	2.67	5.82
1.28	1.92	4.25	2.61
6.24	2.47	8.62	4.28
65.48	59.14	48.21	55.00

JOB No. 2 (Cont'd.)

Strike 3 with the ring finger:

(9)	(10)	(11)	(12)
6.35	6.13	1.83	3.46
9.63	9.31	3.19	5.34
3.56	3.56	1.39	3.12
8.63	8.63	3.27	5.31
2.63	3.29	7.93	3.59
3.65	2.37	9.36	1.32
6.43	4.23	9.73	4.93
7.63	3.52	5.43	6.39
9.53	4.31	5.13	5.93
5.39	3.65	8.23	9.23
8.36	8.34	3.68	3.25
4.35	3.82	3.81	6.31

Answers

9	
10	
11	
12	
13	
14	
15	
16	

Strike 0 with the thumb:

(13)	(14)	(15)	(16)
9.40	4.09	2.80	5.08
1.70	8.60	6.10	1.20
9.04	1.10	1.02	5.07
4.20	6.50	9.20	4.50
6.07	3.01	8.02	6.08
1.90	7.50	9.30	9.09
2.08	9.60	8.10	3.02
6.09	2.09	2.70	7.40
7.05	6.20	8.30	2.10
2.30	3.40	2.05	1.80
1.60	6.90	7.01	5.09
9.06	8.50	2.90	3.60

JOB No. 2 (Cont'd.)

Do Not Look at the Keyboard.
4, 5, and 6 Keys Are Your "Home Row"

Non-Add

It is sometimes necessary to print a number on the tape without adding it in the machine. Non-add may be used to print identifying information such as an invoice number, a check number, an employee's time card number, or the number of a problem.

At the beginning of each problem, number it using the Non-Add Key ㉖. Do this for all problems in this and all following jobs.

To Complete Problems (17) to (20):

1. Clear the machine.
2. Number the problem.
   a. Enter the number of the problem on the keyboard.
   b. Operate the Non-Add Key ㉖.
      (1) **Electric.** Depress the Non-Add Key ㉖. If the number does not print, the Non-Add Key is not electrified. Depress the Plus Bar and the number will print with a non-add symbol.
      (2) **Manual.** Engage the Non-Add Key ㉖ and pull the Operating Handle ㉙ toward you.
3. List the numbers of the problem in the usual manner using the touch system.
4. Take a total.

Name_____

Non-Add

(17)	(18)
4.78	2.31
7.06	3.05
3.57	9.22
4.02	6.34
2.97	8.52
1.63	6.86
3.08	1.78
9.34	3.06
1.48	8.93
1.67	1.72
6.12	7.48
45.72	59.27

*
17#
4.78
7.06
3.57
4.02
2.97
1.63
3.08
9.34
1.48
1.67
6.12
45.72*

Answers

17	
18	
19	
20	

List but do not add numbers labeled (NA):

(19)	(20)
1.87	6.51
5.84	8.96(NA)
5.98	7.45
4.69(NA)	7.63
2.17	5.60
1.23	2.70(NA)
9.12	5.41
1.31	9.12
9.32(NA)	4.01
4.03	7.25(NA)
7.61	8.14
39.16	53.87

Non-Add

Manufacturer	Keyboard of Machine	Symbol on Tape
Burroughs	# NA	#
Comptograph	#	#
Friden	Print Only	N
Marchant	#	#
Monroe	#	#
National Cash Register	#	#
Olivetti, Underwood, or Underwood-Olivetti	◁ or <	< or <<
Remington Rand	Non Add	v
Underwood Sundstrand	No +	⌑
Victor	N	N

JOB No. 2 (Cont'd.)

Timed Drill

(1)	(2)	(3)	(4)
9.62	6.19	8.57	2.66
4.77	8.28	8.67	5.35
3.52	9.20	2.07	4.19
8.23	1.67	3.42	4.17
7.35	5.67	1.41	3.75
7.94	9.58	9.28	2.69
6.46	5.83	1.36	6.06
9.06	4.86	2.07	5.23
4.68	8.16	6.56	6.94
8.95	7.36	2.86	4.94
5.75	3.07	4.83	5.46
5.69	2.61	6.80	4.06
82.02	67.33	62.90	56.50

(5)	(6)	(7)	(8)
1.91	2.56	7.04	3.10
7.10	8.98(NA)	4.18	4.44
6.43	7.37	3.90(NA)	8.09
2.14	8.51	4.53	8.03(NA)
6.80(NA)	4.60	2.08	8.05
8.80	6.86	1.24	1.98
3.50	2.76	3.86	6.26(NA)
8.01	1.08	2.37	3.27
4.26	2.30	6.51	5.14
9.27(NA)	1.32(NA)	8.60	8.42(NA)
1.41	8.10	6.80	8.69
4.18	1.01	3.09	7.91
42.74	45.16	50.30	50.27

Timed Drill

1	
2	
3	
4	
5	
6	
7	
8	

JOB No. 2 (Cont'd.)

Timed Drill

1. Add the numbers in Timed Drill Problem (1) using the touch method. Write the answer in the space under the problem and immediately do Timed Drill Problem (2), then (3), (4), (5), (6), (7), and (8).

2. Do Timed Drill Problem (1) a second time.

   a. If the second answer for Problem (1) is the same as the first, write it in the proper space at the right of the page and proceed to Problem (2).

   b. If the second answer for Problem (1) is not the same as the first, write the second answer directly below the first and do Problem (1) again. Write the answer that proves to be correct in the space at the right of the page and proceed to Problem (2).

3. Do the Timed Drill Problems over and over again as many times as is possible in the time allotted. Place a check mark (✓) after the answer at the right of the page each time it proves to be correct.

3 REPEATED DIGITS VARIED NUMBER OF DIGITS

Warm-Up Drill

Before starting the regular work of this job, complete Warm-Up Drill A, explained below.

Regular practice on fundamental arithmetic operations is vitally important for efficient operation of the ten-key adding-listing machine. Beginning with this job, you will spend the first five minutes of each period practicing on a Warm-Up Drill.

The six addition problems on page 10 contain 30 strokes each. Before starting the regular work of the job, complete these problems as often as possible in the time allotted.

Keep a record of the number of times you do each problem and multiply by 30 to compute the number of strokes. Record the number of strokes:

1. On the first page of the job at the place indicated and
2. On the Warm-Up Drill Record, page 115.

(Warm-Up Drill A continues on next page.)

Repeated Digits

When a digit is repeated, strike the key for the digit a second time. To list 553, strike the 5 key twice and the 3 key once.

JOB No. 3 REPEATED DIGITS VARIED NUMBER OF DIGITS	Name _____ Period _____ Date _____	No. of Errors _____ Warm-Up Drill Strokes ____ Rating _____

Repeated Digits

(1)	(2)	(3)	(4)
5.53	4.94	3.13	1.21
3.32	2.66	9.95	8.58
4.48	5.44	4.54	5.95
4.74	8.82	2.29	4.44
4.64	5.35	8.81	2.72
8.84	9.66	9.69	3.38
5.77	4.49	8.44	9.94
9.29	7.75	9.11	6.56
4.49	1.44	6.96	5.51
7.67	9.92	4.41	6.64
1.41	7.99	2.23	3.31
8.11	2.88	4.11	2.28
68.29	71.34	73.69	60.52

Answers

1	
2	
3	
4	
5	
6	
7	
8	

(5)	(6)	(7)	(8)
7.33	4.33	5.54	9.66
5.99	4.42	9.96	5.05
1.14	7.00	3.00	7.07
9.22	3.33	5.11	3.99
9.44	5.44	1.66	6.00
8.66	7.74	1.21	4.33
5.55	2.99	6.99	1.99
1.21	4.33	9.96	6.06
6.99	3.00	8.28	6.88
6.00	7.00	2.88	2.26
7.66	8.99	1.11	6.63
4.40	6.36	3.77	8.77
73.59	64.93	59.47	68.69

JOB No. 3 (Cont'd.)

Varied Number of Digits

(9)	(10)	(11)	(12)
.51	.87	2.36	41.74
8.96	5.84	.51	.79
417.45	.98	514.84	989.97
.63	4.69	6,246.48	.50
8,205.60	332.17	.67	80.74
72.70	91.23	652.32	8.54
5.44	7,629.12	104.34	665.20
.12	.31	2.69	8,086.76
.01	399.22	.02	69.98
7.25	.08	728.53	3.60
818.14	37.61	19.29	217.67
9536.81	8502.07	8272.05	10165.49

(13)	(14)	(15)	(16)
.78	2.31	.37	9.42
.06	83.05	.20	841.47
3.57	9.22	918.06	7.41
.02	.34	.22	879.89
.97	28.52	737.20	4.54
151.63	.86	8,749.35	506.86
.08	.78	.31	401.58
.34	.06	.09	4.98
.48	978.93	3.81	2.75
1.67	3,591.72	2.17	271.55
86.12	.48	.80	253.07
245.72	4696.27	10412.55	3183.52

Answers

9	
10	
11	
12	
13	
14	
15	
16	

JOB No. 3 (Cont'd.)

Warm-Up Drill A

(1)	(2)	(3)
3.41	4.78	2.21
9.75	2.94	1.95
3.68	1.92	8.14
9.28	3.50	7.52
6.57	6.71	1.85
9.12	8.75	2.29
1.72	7.54	5.20
9.42	9.49	7.84
2.78	4.54	3.67
7.88	3.59	4.28
63.67	63.76	44.95

(4)	(5)	(6)
9.05	2.97	8.72
6.41	4.37	5.43
7.80	6.05	7.95
5.40	7.64	6.59
9.01	6.21	9.52
5.13	1.38	8.01
9.20	4.06	5.04
7.15	4.92	8.40
1.23	1.28	1.00
6.96	8.50	1.06
69.34	47.38	61.72

Varied Number of Digits

When there is a varying number of digits, enter numbers in the usual manner. If necessary, look at the Digit Indicator @ to determine how many digits are entered on the keyboard.

If a number consists of only one digit, on some machines a zero will automatically print before the digit. This will not affect the answer.

Do not strike a zero if it is the only number before a digit, until you are told to do so in later jobs to position a number.

JOB No. 3 (Cont'd.)

To Complete Problems (17) and (18):

Add the items on each deposit slip using the touch method. Record the total under the last item on the deposit slip.

JOB No. 3 (Cont'd.)

Name_____

(17)

The UNION TRUST CO.

ACCOUNT NUMBER 1 5 6 — 7 2 4 1 5

John Summers
PLEASE PRINT EXACT TITLE OF ACCOUNT
732 Lincoln Avenue

Nov. 14, 19

Checks and other items are received for deposit subject to the terms and conditions of this bank's collection agreement.

CURRENCY	335 00
SILVER	27 82
CHECKS	
Washington	273 83
Newark	72 49
Pittsfield	134 78
Los Angeles	258 16
Hartford	389 49
Louisville	100 00
Dallas	8 30
Fort Worth	248 50
Knoxville	16 89
TOTAL →	1775 26

A B C D

(Made in U. S. A.)

(17) _____

(18)

The UNION TRUST CO.

ACCOUNT NUMBER 2 4 1 — 3 7 6 3 9

James Speed
PLEASE PRINT EXACT TITLE OF ACCOUNT
138 Fifth Avenue

Nov. 16, 19

Checks and other items are received for deposit subject to the terms and conditions of this bank's collection agreement.

CURRENCY	278 00
SILVER	25 10
CHECKS	
Lincoln	7 38
Newark	121 40
Philadelphia	100 00
Detroit	130 32
Cincinnati	9 77
Columbus	471 98
Denver	238 21
Carson City	24 56
St. Paul	123 78
Akron	25 00
TOTAL →	1465 50

A B C D

(Made in U. S. A.)

(18) _____

Timed Drill

(1)	(2)	(3)	(4)
6.00	4.22	9.99	8.77
6.44	6.63	6.99	6.68
7.11	9.00	1.22	9.09
6.69	3.37	9.91	3.44
1.12	1.11	3.11	6.00
8.68	4.33	5.55	3.99
9.44	2.66	1.16	7.00
9.92	6.11	3.00	5.05
4.55	6.33	2.99	9.66
9.11	2.88	4.47	9.99
7.73	8.28	7.75	4.44
3.11	6.00	5.54	7.66
79.90	60.92	61.68	81.77

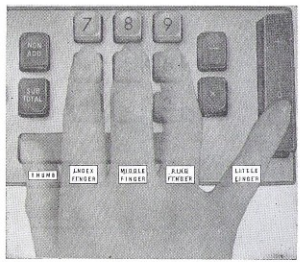
Timed Drill

1	
2	
3	
4	
5	
6	
7	
8	

(5)	(6)	(7)	(8)
372.89	1.39	42.10	21.64
3.01	.16	5.13	.54
.57	.32	3.50	4.62
68.36	4,114.49	242.25	7,485.16
1.61	286.74	.10	.05
.64	249.97	5.90	.18
14.48	5.07	168.23	4.89
462.39	7.71	80.20	2,767.98
584.23	66.96	1.11	.75
476.03	118.62	37.91	2.50
1911.21	4851.43	586.43	10288.31

Timed Drill

Do Timed Drill Problems (1) to (8) in the usual manner following the instructions given on page 8.



Strike 1, 4, 7 with the Index Finger.
Strike 2, 5, 8 with the Middle Finger.
Strike 3, 6, 9 with the Ring Finger.

4 SUBTRACTION CORRECTION OF ERRORS

Warm-Up Drill

Complete Warm-Up Drill A, page 10.

Subtraction

The upper number in a subtraction problem is called the "minuend." The lower number is the "subtrahend." The answer is the "remainder" or "difference."

*	
1#	
7.48	← Minuend
4.23–	← Subtrahend
3.25*	← Remainder or Difference

1. Clear the machine.
2. Number the problem using the Non-Add Key ㉖.
3. Add the minuend into the machine.
   a. Enter the minuend [7.48]* on the keyboard using the touch method.
   b. Add it into the register.
4. Subtract the subtrahend.
   a. Enter the subtrahend [4.23] on the keyboard using the touch method.
   b. Subtract.
      (1) **Electric Machines**
      Strike the Minus Key ㉑. If the machine does not become activated, engage the Minus Key and strike the Plus Bar ㉜.
      (2) **Manual Machines**
      Engage the Minus Key ㉑ and pull the Operating Handle ㉙ toward you.
   On some machines the subtrahend will print in red.
5. Take a total [3.25].

*Numbers from the first problem to illustrate the instructions are enclosed in brackets [ ].

JOB No. 4 SUBTRACTION CORRECTION OF ERRORS	Name _____ Period _____ Date _____	No. of Errors _____ Warm-Up Drill Strokes _____ Rating _____

(1)	(2)	(3)	(4)
7.48	64.80	27.96	74.57
4.23–	28.82–	18.54–	69.81–
3.25	35.98	9.42	4.76

(5)	(6)	(7)	(8)
9.63	4.19	6.49	4.24
3.22–	2.06–	4.21–	2.79–
6.41	2.13	2.28	1.45

(9)	(10)	(11)	(12)
6.66	82.81	74.54	96.27
4.28–	4.96–	3.73–	5.69–
2.38	77.85	70.81	90.58

(13)	(14)	(15)	(16)
87.64	57.50	738.67	7,213.02
2.40–	6.77–	4.06–	578.54–
85.24	50.73	734.61	6634.48

(17)	(18)	(19)	(20)
1,690.69	5,083.49	7,588.06	2,961.08
6.83–	96.65–	340.59–	1,504.20–
1683.86	4986.84	7247.47	1456.88

Answers

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

JOB No. 4 (Cont'd.)

(21)	(22)	(23)
5.83	4.39–	5.97
604.06–	.04	8.86
648.58	22.45	.69–
3.33	74.18	.37
3.33–	30.62	520.54
3.53	235.16–	3.88
370.92	609.71	507.46
.09	69.68	96.10
16.28–	51.60–	12.26–
16.28	808.59	12.28–
16.26–	753.32	23.14
501.17	486.01–	58.43–
909.80	1591.43	1082.66

(24)	(25)	(26)
57.54	.26	8.40
8.03	19.46	5.53
1.26	.71	1.08–
986.91	.82	813.90
73.62–	23.75–	623.09
44.53	703.84	836.74
8.27	3.67	32.49
6.95	51.31	50.47
37.19	27.56	.12
90.78–	84.05–	58.54
801.53	689.24	9.92–
.40	6.83–	16.76
1788.21	1382.21	2435.04

Answers

21	
22	
23	
24	
25	
26	

JOB No. 4 (Cont'd.)

Problems (21) to (26) contain items to be added or subtracted. Subtract numbers followed by a minus (–) sign and add all other numbers.

Correction of Errors

If an error is discovered:

1. **Before the incorrect number has been printed**, operate the Clear Key (Bar, Lever) ④. If only the last digit of the number is incorrect, clear only that digit by operating the Backspace Key (Lever) ③, if your machine has such a mechanism. If you have a manual machine that has no Clear Key (Bar, Lever), pull the Operating Handle forward an inch or two and then permit it to drop back. This will eliminate the incorrect number.

2. **After the error has been printed on the tape but before the problem is totaled,** subtract or add the incorrect number to cancel the error.

3. **After the problem has been totaled,** make the correction with pencil or pen directly on the tape and adjust your answer on the tape.

JOB No. 4 (Cont'd.)

To Complete Problems (27) to (39):

1. For each department, subtract the Cost of Goods Sold from the Sales. Record your answer in the Gross Profit column.
2. Add the Sales column.
3. Add the Cost of Goods Sold column.
4. Add the Gross Profit column.
5. Subtract the Total Cost of Goods Sold from the Total Sales. The difference should equal the Total in the Gross Profit column.

JOB No. 4 (Cont'd.)

Name_____

RECORD OF DAILY SALES,
COST OF GOODS SOLD,
AND GROSS PROFIT

October 12, 19--

Department	Sales	Cost of Goods Sold	Gross Profit
Blouse	128.94	103.20	25.74
Cosmetics	490.39	412.61	77.78
Handbag	550.26	489.37	60.89
Millinery	266.70	190.18	76.52
Hosiery	117.72	91.34	26.38
Jewelry	960.26	563.21	397.05
Lingerie	145.93	120.68	25.25
Neckwear	268.42	213.49	54.93
Notions	89.48	62.43	27.05
Shoe	474.26	334.80	139.46
Totals	3492.36	2581.31	911.05

911.05

(37)	(38)	(39)

Answers

27	
28	
29	
30	
31	
32	
33	
34	
35	
36	

(15)

JOB No. 4 (Cont'd.)

Timed Drill

(1)	(2)	(3)	(4)
55.63	9.97	46.58	7.04
7.88–	6.68–	8.65–	.96–
47.75	3.29	37.93	6.08

(5)	(6)	(7)	(8)
9.52	381.84	688.77	11.49
8.23–	7.22–	5.83–	4.79–
1.29	374.62	682.94	6.70

Timed Drill

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

(9)	(10)	(11)	(12)
.64	165.70	8.77	5.83
.21–	7.29–	649.52–	448.21–
4.02	17.64	845.63	7,885.77
548.05–	.80	581.49	544.75
82.49	9.84–	14.79	69.55
.38	79.57	.90	219.21–
1.14	7.67	53.68	3,798.26
468.21	.28–	545.71	754.33
5.74–	2.20–	2.04	3.19
8.57	26.67	206.28	.68
.40	3.27	133.92–	621.05
1.87	.74	47.31	39.41
13.72	282.45	1523.16	13055.40

JOB No. 4 (Cont'd.)

Timed Drill

Do Timed Drill Problems (1) to (12) in the usual manner.

Correct Position at Machine

5 SPEED DRILL ADDITION

The Speed Drills in this book are designed to aid you to increase speed and accuracy in operating the ten-key adding-listing machine.

This drill contains 28 problems of 50 strokes each, a total of 1,400 strokes. In completing this drill you should strive constantly to improve both speed and accuracy.

1. Complete each problem once, writing the answer in the space at the right of the page.
2. Complete the drill again, this time keeping a close check on the time in minutes and seconds.
   a. If the second answer is the same as the first, place a check mark (✓) beside the first answer.
   b. If the second answer is not the same as the first, write the second answer alongside the first answer.
3. Record in the Time Record at the right the time that was required to complete the drill.
4. Complete the drill again and again during the time allotted by your instructor. Record the number of minutes and seconds required each time, trying constantly to increase your speed.
5. When you have spent the allotted time on the drill, draw a circle around your fastest time in the Time Record form.

JOB No. 5
SPEED DRILL
ADDITION

Name _____

Period _____ Date _____

No. of Errors _____

Rating _____

(1)	(2)	(3)	(4)
510.68	281.77	7,049.10	3,764.04
63.24	96.32	.04	917.85
.50	6,662.93	909.20	6.21
3,466.42	6.71	.70	615.47
7.36	2,864.19	95.59	843.00
146.28	23.27	53.44	3.88
44.63	5.92	475.05	.06
.88	188.40	.23	629.76
944.61	553.34	7,309.35	9,888.67
7.87	.05	8.17	.44
7,207.75	433.09	9,058.64	98.35
859.85	3.45	6,284.42	303.47
13260.07	1419.44	31243.93	17071.20

(5)	(6)	(7)	(8)
.09	8,262.52	23.85	.05
504.71	244.38	5,665.21	317.00
80.64	4.65	6.63	9.53
7,677.89	6,455.76	908.56	3,065.94
2.18	88.82	446.50	7.82
6,392.01	.01	7.94	52.59
798.05	.06	119.89	444.66
4.12	7,221.71	.10	967.62
1,891.57	314.47	8,153.30	100.95
9,668.45	6.67	427.87	.64
1.81	393.34	3.50	662.80
.42	746.43	1.00	1,205.73
27021.94	23738.82	15764.35	4835.33

Time Record		
No.	Time	
	Min.	Sec.
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Answers

1	
2	
3	
4	
5	
6	
7	
8	

JOB No. 5 (Cont'd.)

(9)	(10)	(11)	(12)
17.84	.05	2,321.68	4.55
620.60	60.41	1.55	7.58
1.07	2,855.95	878.13	359.82
38.99	8,361.92	9.97	61.71
74.61	1.29	655.84	1,306.26
837.45	429.68	2.51	1,732.22
7,925.71	7,277.86	444.63	2.16
.59	.07	.67	52.13
3,722.94	959.54	692.67	7.55
2.56	7,069.21	6.24	7,268.69
635.69	973.83	859.56	.71
9.77	.38	207.53	832.60
13824.82	22990.19	5680.98	11635.98

Answers

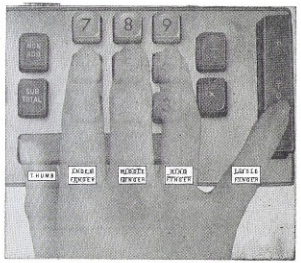
9	
10	
11	
12	
13	
14	
15	
16	

(13)	(14)	(15)	(16)
434.26	.08	947.79	.04
5,353.98	543.85	721.74	5,525.59
1.62	647.80	9.61	.33
514.40	487.12	75.79	88.18
.02	7,468.76	4.98	5.09
11.56	635.11	301.96	8,217.34
8.03	103.78	83.18	401.46
959.30	.73	.77	822.23
499.63	75.46	7,991.00	93.41
2.58	7.03	493.20	292.64
9,795.90	5,347.42	4.25	3.12
66.56	6.57	608.31	4,615.43
17647.84	15323.71	11426.58	20064.86

JOB No. 5 (Cont'd.)

Correct Position at Machine

JOB No. 5 (Cont'd.)



Use the Touch Method.
Do Not Look at the Keyboard.

JOB No. 5 (Cont'd.)

Name _____

(17)	(18)	(19)	(20)
362.83	174.73	9,864.74	689.78
208.84	2.42	454.69	399.95
6.86	74.63	4.21	.44
8.90	9.12	21.60	4,071.45
521.08	865.85	5,991.99	142.89
781.61	4.76	3.62	9.31
.05	9,045.56	965.06	179.34
631.01	2.97	8.58	.04
8.63	45.62	73.65	706.25
4,133.56	249.90	1.31	3.61
6.40	3,679.54	304.92	8,823.82
8,787.52	3.08	8.99	33.20
15457.29	14358.18	17703.36	15060.08

Answers

17	
18	
19	
20	
21	
22	
23	
24	

(21)	(22)	(23)	(24)
2,917.85	248.83	33.39	.26
9.30	526.48	1.65	8,526.00
8,249.15	28.53	667.84	6.89
683.50	6.05	2,288.80	7,907.50
8.89	598.07	.06	2.82
7,012.72	43.89	3,705.38	215.73
9.51	.95	298.93	4,811.12
839.38	152.61	3.27	739.02
.08	6.16	9,658.10	.81
231.41	414.68	78.93	4.48
6,936.33	405.60	36.22	899.23
.03	31.20	4.43	61.17
26888.12	2169.05	16772.00	23175.67

JOB No. 5 (Cont'd.)

(25)	(26)	(27)	(28)
1,484.18	78.18	4,822.33	.70
217.09	3.19	882.70	6,096.65
70.79	135.86	3.01	8.61
3.26	9.46	289.55	3,832.30
572.54	4,561.22	63.02	118.26
.07	397.35	8,656.04	.26
.17	1.58	.22	77.41
30.65	611.00	78.88	4.22
953.03	2.63	.94	2,259.27
2,072.73	8,273.95	992.56	373.66
4.43	1,397.74	2,792.23	608.18
9,486.13	.08	.32	7.91
14895.67	15472.24	18581.80	13387.43

Answers

25	
26	
27	
28	

Three-Minute Checkup Results

Number of problems completed..... _____

Gross strokes..... _____
(Multiply 50 by number of problems completed)

Minutes..... 3

Gross strokes a minute..... _____
(Divide gross strokes by 3)

Number of wrong answers..... _____

Number of correct answers..... _____

Net strokes..... _____
(Multiply 50 by number of correct answers)

Net strokes a minute..... _____
(Divide net strokes by 3)

JOB No. 5 (Cont'd.)

Three-Minute Checkup

Before proceeding with the Three-Minute Checkup, erase the answers for all problems of the drill.

To complete the Three-Minute Checkup:

a. Do as many problems in the Speed Drill as possible in three minutes.

b. Record each answer in the space provided at the right side of the page.

c. At the end of the allotted time use the form at the bottom of this page to calculate the results of the checkup.

d. Record results on the Speed Drill Record, page 115.

Give the completed job to your instructor.

6 SUBTOTAL

Warm-Up Drill

Complete Warm-Up Drill A, page 10.

It is sometimes necessary to obtain a total and then add more numbers to this total. This type of total is called a "subtotal."

Subtotals on the keyboard of the machine and on the tape are identified with the following symbols:

Subtotal		
Manufacturer	**Keyboard of Machine**	**Symbol on Tape**
Burroughs	• ST	•
Comptograph	◇	◇
Friden	SUB TOTAL	S
Marchant	COR SUB	S
Monroe	S	S
National Cash Register	S	S
Olivetti, Underwood, or Underwood-Olivetti	◇	◇ or ◇ < ◇
Remington Rand	SUB TOTAL	S
Underwood Sundstrand	+ SUB TOTAL	Printed in red
Victor	+ S or S	S

1. Clear the machine.
2. Number the problem using the Non-Add Key (26).
3. List numbers in the usual manner until there is a space in the problem for a subtotal.
   a. **Electric Machines**
      (1) **Some models of Remington Rand** Strike the Plus Bar once and then hold down the Subtotal Key (39) and strike the Plus Bar again.

JOB No. 6
SUBTOTAL

Name _____
Period _____ **Date** _____

No. of Errors _____
Warm-Up Drill Strokes _____
Rating _____

(1)	(2)	(3)	(4)
903.67	17.72	251.45	903.67
5.56	5.29	.68	5.56
9.15	316.22	2.51	9.15
2.53	1.33	188.88	2.53
	945.45	14.05	
920.91	903.40	8.42	920.91
486.14	6.90	.96	486.14
.53	640.54		.53
9.95		466.95	9.95
9.87	2836.85	906.34	9.87
1.80	6.47	387.49	1.80
721.49	721.03	429.80	721.49
37.96	368.97	78.44	37.96
825.51	7.21	.82	825.51
3014.16	3940.53	2269.84	3014.16

(5)	(6)	(7)	(8)
2.18	871.57	69.95	5.11
.03	225.31	2.91	2.11
5.11	11.93		
2.11		72.86	7.22
	1108.81	.74	.25
9.43	639.85	.91	5.33
.25		68.01	.69
5.33	1748.66		.90
.69	5.86	142.52	7.16
.90	61.98	9.21	8.65
7.16	227.13	7.62	4.47
8.65	173.77	3.70	
4.47	69.84	8.32	34.67
	7.21	4.15	.37
36.88	291.40	.90	.16
.37	.20	.53	.21
37.25	2586.05	176.95	35.41

Answers

S	
1	
S	
2	
S	
3	
S	
4	
S	
S	
5	
S	
S	
6	
S	
S	
7	
S	
S	
8	

(9)	(10)	(11)	(12)
2.38	115.35	962.78	.68
.06	255.79	739.42	9.20
.29	292.84	11.96	385.47
1.05	3.40	9.51	9.18
.08	901.39	9.00	.92
5.40	6.89	.40	3.45
.34	.63	4.96	.25
694.78		2.79	5.65
634.64	1576.29	.20	414.80
95.49	.06	51.02	6.10
2.20	6.36	648.19	66.75
257.09	9.76	7,368.28	508.16
1693.80	87.88	221.21	741.23
.11	344.88	10029.22	85.26
1.86	281.79	1.91	3.46
2.03	2.00	.69	1.19
909.44	91.12	.18	.54
34.71	7.14	5.87	3.14
62.72	.67	.87	1830.63
1.93	3.61	8.78	7.78
25.70	.69	316.65	54.61
.91	2412.25	.71	488.08
78.79	45.99	52.57	22.17
235.06	.28	60.53	.50
7.34	.07	526.99	1.73
3054.40	.19	3.57	721.86
667.89	28.65	11009.04	.26
46.79	715.26	13.82	323.19
4.14	3.17	148.76	4.55
853.82	57.09	8.54	.98
.26	8.28	89.67	100.74
9.47	.53	.45	30.18
4636.99	522.99	11270.28	3587.26
	3794.95		

Answers

S	
S	
9	
S	
S	
10	
S	
S	
11	
S	
S	
12	

841
79
5

(2) **Victor**
Move the Subtotal Lever ㊴ to S and strike the Plus Bar once.

(3) **Other Machines**
Depress the Subtotal Key ㊴. If the subtotal does not print, the Subtotal Key is not electrified. Engage the Subtotal Key and strike the Plus Bar.

b. **Manual Machines**

(1) **Monroe**
(a) Pull the Operating Handle toward you.
(b) As you release the Operating Handle, depress the Subtotal Key ㊴.
(c) Again pull the Operating Handle toward you and release it.

(2) **Remington Rand**
(a) Pull the Operating Handle toward you and release it.
(b) Depress the Subtotal Key ㊴
(c) Again pull the Operating Handle toward you and release it.

(3) **Olivetti, Underwood, or Underwood-Olivetti**
(a) Move the Switch to the Subtotal Position ㊴.
(b) Pull the Operating Handle toward you and release it.

(4) **Underwood Sundstrand**
(a) Pull the Operating Handle toward you and release it.
(b) Again pull the Operating Handle toward you and release it.

A subtotal will print with a subtotal symbol. On some machines the subtotal will be in red.

4. List the remaining numbers in the problem.

5. Take a total.

This statement shows the purchases (debits) and payments (credits) made by Mertin's Flower Shop on its account with the Scoutman Wholesale Flower Company.

The final balance of $74.35 is apparently the amount due. However, Mertin's books show that the balance should be $74.25 instead of $74.35. Thus, it is necessary to check the statement to see if it is in error.

Check the numbers in the balance column by adding $21.30 and then $12.58 into the machine. Take a subtotal. Continue to add debits, subtract credits, and take subtotals until all numbers in the balance column have been verified. If an error is found, cross out the mistake and write in the correct balance. Adjust the final balance.

JOB No. 6 (Cont'd.)

Name_____

(13)

STATEMENT

SCOUTMAN WHOLESALE FLOWER COMPANY

2962 Shakespeare Avenue
RICHMOND 29, VIRGINIA

Mertin's Flower Shop
125 Clarence Avenue
Richmond 19, Virginia

Phone 812-3597

Date May 31, 19--

Date	Debits	Credits	Balance
May 3	21.30		21.30
7	12.58		33.88
8	79.32	21.30	91.90
10	67.24		159.14
12		91.90	67.24
15	32.38		99.62
17	15.75		115.47
20	7.82		123.29
24	19.00		142.29
27		123.29	~~19.00~~ 18.90
30	55.35		74.35

(13)

(23)

JOB No. 6 (Cont'd.)

Timed Drill

(1)	(2)	(3)	(4)
9.38	593.24	.19	2.65
5.32	788.48	1.72	1.92
4,455.71	987.24	.07	1.21
6,692.75	26.30	22.18	.27
258.79	2395.26	379.41	.15
382.31		403.57	5.80
67.56	144.95		12.00
6.03	6,722.13	5.64	
8.41	867.52	4.49	1.12
1886.26	3,719.97	7.48	15.58
.68	5,202.29	7.76	9,597.92
3.19	173.22	7.39	3,939.84
934.42	761.18	2.18	26.41
12824.55	.75	.03	6.54
	19987.27	438.54	13599.41

(5)	(6)	(7)	(8)
8.64	5.80	633.63	68.38
597.40	509.59	5,029.58	3.97
2.13	4,467.23	3,935.06	.74
823.55	639.78	6,269.50	5.21
94.98	68.01		.50
69.95		15862.77	
2.91	5690.41	259.45	78.80
	9.21	1.34	3.81
1599.56	7.62	5.98	678.31
.74	3.70	.90	291.84
.91	8.32	5.99	938.63
.78	4.15	.53	88.27
8.73	.90	.06	9.60
62.81	.53	7.94	7.07
1673.53	5724.84	16149.96	2096.33

Timed Drill

S	
1	
S	
2	
S	
3	
S	
4	
S	
5	
S	
6	
S	
7	
S	
8	

JOB No. 6 (Cont'd.)

Timed Drill

Do Timed Drill Problems (1) to (8) in the usual manner.

To Improve Your Work

Accuracy and speed will be increased by strict adherence to the following suggestions:

1. Read numbers in natural groups divided by commas and decimals.
2. Strike the keys separately for digits in each number.
3. Do not pause between strokes.
4. Keep your eyes on the written numbers. Do not look at the keyboard of the machine.
5. Estimate the answer mentally.
6. Record answers rapidly.
   a. Look at the answer on the tape and keep it in mind.
   b. Write the answer in the proper place.

7 REPEAT ADDITION

Warm-Up Drill

Complete Warm-Up Drill B, page 27.

When several successive numbers in a column are the same or very similar, time can be saved by using the Repeat Key.

1. Clear the machine.
2. Number the problem using the Non-Add Key.
3. To list two or more successive, identical numbers:
   a. Strike keys for the number.
   b. List the number the required amount of times.

Electric Machines

(1) **Electrified Repeat Key** ㉟. Hold down the Repeat Key for the required number of additions. On some machines it is necessary to hold the Repeat Key and the Plus Bar simultaneously.

(2) **Non-Electrified Repeat Key** ㉟
   (a) Engage the Repeat Key.
   (b) Hold down the Plus Bar for the required number of additions.

Manual Machines

(1) Engage the Repeat Key ㉟.
(2) Pull the Operating Handle toward you for the required number of additions.

   c. Operate the Clear Bar (Key, Lever).
4. List the remaining numbers in the problem by repeating Step 3.
5. Release the Repeat Key.
6. Take a total.

JOB No. 7	Name _____	No. of Errors _____
REPEAT ADDITION	Period _____ Date _____	Warm-Up Drill Strokes _____
		Rating _____

(1)	(2)	(3)	(4)
4.74	6.09	.55	165.43
4.74	6.09	.55	165.43
4.74	8.22	.55	165.43
4.74	8.22	.55	2.97
4.74	8.22	.55	2.97
3.43	8.22	.55	2.97
3.43	8.22	9.25	2.97
3.43	8.22	9.25	53.68
9.16	1.78	9.25	53.68
9.16	1.78	9.25	53.68
9.16	1.78	5.46	53.68
9.16	1.78	5.46	53.68
70.63	62.18	51.22	776.57

(5)	(6)	(7)	(8)
.53	9.82	929.97	.57
.53	9.82	929.97	.57
.53	9.82	23.14	.57
58.56	9.82	23.14	3.76
58.56	9.82	23.14	3.76
58.56	.69	23.14	3.76
58.56	.69	23.14	3.76
58.56	66.20	23.14	217.10
58.56	66.20	23.14	217.10
58.56	80.74	1.69	217.10
4.46	80.74	1.69	33.95
4.46	80.74	1.69	33.95
420.43	425.10	2026.99	735.95

Answers

1	
2	
3	
4	
5	
6	
7	
8	

JOB No. 7 (Cont'd.)

(9)	(10)	(11)	(12)
1.03	2.73	2.00	3.65
1.05	2.79	2.08	3.68
1.08	2.78	2.07	3.69
1.06	2.75	2.03	3.67
1.07	2.76	2.05	3.65
1.09	2.74	2.04	.46
1.04	2.77	2.09	.49
1.08	7.50	2.06	.46
1.09	7.59	2.07	.48
3.62	7.56	9.74	.47
3.63	7.55	9.79	.46
3.67	7.53	9.78	.48
20.51	57.05	47.80	21.64

Answers

9	
10	
11	
12	
13	
14	
15	
16	

In the following problems, use the repeat key only where it is advantageous.

(13)	(14)	(15)	(16)
3.78	8.41	3.37	.21
.53	8.41	.19	.20
.01	8.41	.09	.26
714.40	964.47	593.15	26,533.38
5.66	2.66	6.45	8.82
.56	.71	.58	2.93
.58	.46	.58	2.93
7.00	9.83	.58	2.93
8.28	5.42	9.33	11.35
.59	64.57	915.56	1.35
.59	4,751.34	4.04	1.35
.59	64.40	4.04	4.83
742.57	5819.09	1537.96	26520.54

JOB No. 7 (Cont'd.)

If your machine has a Back Space Key (Lever)⊖, and there is a change in only the last one or two digits in two or more successive numbers such as 1.03, 1.05, 1.08, and 1.06:

1. Strike keys for the number [1.03].
2. Using the Repeat Key (Lever), list the number on the tape.
3. Operate the Back Space Key (Lever) to release the last digit [3 in 1.03].
4. Depress the key for the last digit of the next number [5 of 1.05] to be listed.
5. Using the Repeat Key (Lever), list the number on the tape.
6. Repeat Steps 3, 4, and 5 for the remaining numbers of the problem when it is convenient to do so. When it is not convenient to list numbers in this manner, clear the number from the keyboard. Disengage the Repeat Key, if necessary, and add in the usual manner.
7. Take a total.

(26)

JOB No. 7 (Cont'd.)

Warm-Up Drill B

During the first five minutes of the period do Warm-Up Drill B below, following the usual procedure. Each problem contains 6 strokes.

(1)	(2)	(3)
8.00	8.76	4.06
4.90–	5.96–	3.67–
3.10	2.80	.39
(4)	**(5)**	**(6)**
6.04	5.03	9.49
2.66–	2.14–	4.49–
3.38	2.89	5.00
(7)	**(8)**	**(9)**
5.18	8.88	5.49
4.15–	1.05–	4.05–
1.03	7.83	1.44
(10)	**(11)**	**(12)**
4.26	7.42	7.13
2.15–	1.24–	4.34–
2.11	6.18	2.79
(13)	**(14)**	**(15)**
2.34	1.23	9.30
1.43–	5.83–	2.30–
.91	4.60	7.00

JOB No. 7 (Cont'd.) Name_____

(17)	(18)	(19)	(20)
4.23	4.84	8.46	7.98
4.23	4.88	8.46	7.98
4.23	4.86	8.46	7.92
4.23	4.87	8.46	7.96
375.65	5.24	.16	7.93
375.65	5.28	.16	74.67
375.65	4.29	.16	74.68
375.65	5.22	649.76	74.62
375.65	4.28	649.76	74.65
375.65	5.29	649.76	.37
.64	15.35	649.76	.38
.64	15.38	68.46	.39
.64	15.36	68.46	.32
4.28	49.74	68.46	.34
4.28	49.78	68.46	.35
4.28	59.76	68.46	8.74
64.15	49.78	68.46	8.77
64.15	55.94	.63	8.79
64.15	55.99	.63	8.72
64.15	55.93	.63	85.77
.05	5.74	6.29	85.79
.05	5.78	6.29	85.78
.05	4.72	6.29	85.79
.05	5.77	6.29	85.75
.05	5.73	6.29	85.72
2542.43	499.80	3077.46	890.16

Answers

17 _____
18 _____
19 _____
20 _____

Timed Drill

(1)	(2)	(3)	(4)
32.47	5.01	9.37	48.34
32.47	5.01	9.37	48.34
32.47	5.01	9.37	48.34
6.56	739.56	9.37	483.40
6.56	739.56	9.38	483.40
6.56	739.56	9.38	483.40
6.56	739.56	9.38	483.40
6.56	5.69	93.80	483.45
.66	5.69	93.80	483.45
.66	.88	.93	483.45
514.57	.88	.93	48.37
514.57	.88	.93	48.37
1160.69	2987.28	256.01	3625.91

(5)	(6)	(7)	(8)
.56	1.42	.35	7.03
.58	1.47	.31	7.06
.57	1.46	.32	7.01
.53	1.43	.30	7.09
.54	1.40	5.82	7.04
.56	1.45	5.85	7.02
.59	6.97	5.87	9.26
9.21	6.99	5.89	9.24
9.23	6.96	5.83	9.21
9.28	6.93	5.80	9.23
9.26	6.91	5.84	9.28
9.27	6.92	5.81	9.20
60.18	50.31	47.99	97.47

Timed Drill

1	
2	
3	
4	
5	
6	
7	
8	

Timed Drill

Do Timed Drill Problems (1) to (8) in the usual manner.

To Improve Your Work

Accuracy and speed will be increased by strict adherence to the following suggestions:

1. Clear your desk of everything except materials needed for this class.
2. Place this book on the desk in the same position as paper for writing with pen or pencil.
3. Place the machine to the right of the book.
4. Sit in a comfortable, erect position with your feet flat on the floor.
5. Hold the right arm as in free-arm writing with the wrist straight.
6. Curve the fingers of your right hand.

8 MULTIPLICATION

Warm-Up Drill

Complete Warm-Up Drill B, page 27.

In this and all subsequent jobs, clear your machine and number all problems even though the instructions will not direct you to do so.

Multiplication on a ten-key adding-listing machine is performed by repeated addition. Add the multiplicand the number of times indicated by the multiplier to find the product. (See example at right.)

Standard Machines

(See following pages for Automatic Multipliers and Printing Calculators)

1. Strike keys for the multiplicand [13]. (On Friden and National Cash Register machines with a Multiplication Lever ㉒, engage the lever.)
2. List the multiplicand the number of times indicated by the units digit (the extreme right digit) in the multiplier [2 in 12]. (See Repeat Addition in Job No. 7 if necessary.)
3. Strike the 0 key. This moves the multiplicand one place to the left in the Digit Indicator. (On Friden and National Cash Register machines with a Multiplication Lever ㉒ it is not necessary to strike the 0.)
4. List the multiplicand the number of times indicated by the tens digit (the second digit from the right) in the multiplier [1 in 12].
5. Repeat Steps 3 and 4 for each additional digit in the multiplier moving from right to left.
6. When the multiplicand has been multiplied by all the digits in the multiplier:
   a. Release the Repeat Key if it was engaged.
   b. Operate the Clear Bar (Key, Lever). On some machines the multiplicand will automatically clear from the Digit Indicator after the last digit has been multiplied.
7. Take a total [156]. Disregard the decimal point if one is printed on the tape.

JOB No. 8	Name _____	No. of Errors _____
MULTIPLICATION	Period _____ Date _____	Warm-Up Drill Strokes _____
		Rating _____

To multiply 5 × 3, 5 is added 3 times.

	Pencil and Paper
*	
5	5 Multiplicand
5	→ ×3 Multiplier
5	—
15*	→ 15 Product

(1) 13 × 12 = 156

(2) 683 × 24 = 16392

(3) 9,446 × 891 = 8416386

(4) 293,259 × 24 = 7038216

(5) 7,955 × 941 = 7485655

Answers

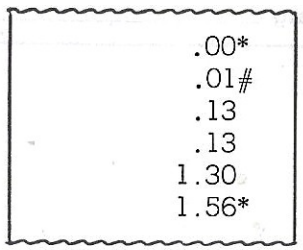
1 _____
2 _____
3 _____
4 _____
5 _____

Standard Machines

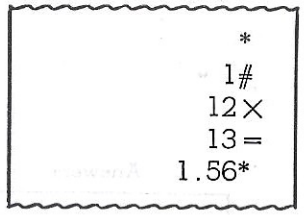
	Pencil and Paper
*	
1#	
	13 Multiplicand
13	×12 Multiplier
13	2 → 26
1.30	1 → 130
1.56*	→ 156 Product

JOB No. 8 (Cont'd.)

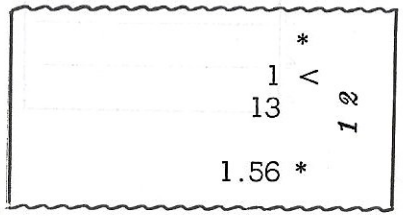
Automatic Multipliers



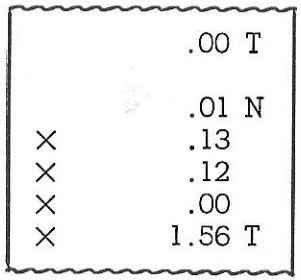
Burroughs



Monroe



Olivetti, Underwood, and Underwood-Olivetti



Victor

(6) 30,413 × 36 = 1094868

(7) 53,711 × 389 = 20893579

(8) 1,247 × 53 = 66091

(9) 269 × 91 = 24479

(10) 7,529 × 113 = 850777

(11) 9,526 × 381 = 3629406

(12) 407 × 16 = 6512

(13) 9,599 × 752 = 7218448

(14) 23,047 × 32 = 737504

(15) 883 × 744 = 656952

(16) 63,440 × 843 = 53479920

(17) 9,281 × 26 = 241306

(18) 71,134 × 382 = 27173188

(19) 489 × 371 = 181419

(20) 76,542 × 21 = 1607382

Answers

6
7
8
9
10
11
12
13
14
15
16
17
18
19
20

JOB No. 8 (Cont'd.)

Automatic Multipliers

1. Burroughs

a. Enter the multiplicand on the keyboard [13].
b. Set the Multiplier Wheel ㉔ for the units digit in the multiplier [2 of 12].
c. Depress the Multiplication Key ㉒.
d. Repeat Steps b and c for all other digits in the multiplier moving from right to left.
e. Clear the keyboard.
f. Depress the Total Key.

2. Monroe

a. Engage the Automatic Total Key ②.
b. Enter the multiplier [12] and depress the Multiplier Key ㉔.
c. Enter the multiplicand [13] and depress the Multiplication Key ㉒. The product [156] will print automatically.

3. Olivetti, Underwood, and Underwood-Olivetti

a. Enter the multiplicand [13] and the last digit of the multiplier [2 of 12]. [Enter 132].
b. Depress the Multiplication Key ㉒.
c. Enter the tens digit of the multiplier [1 of 12] and depress the Multiplication Key (See Step e).
d. Repeat Step 2c for each additional digit in the multiplier except the last digit at the left.
e. For the last digit at the left of the multiplier, simultaneously depress the Multiplication Key and the Automatic Total Key ②
f. The product will print automatically [156].

4. Victor

a. Push the Control Lever ⑦ away from you. An X should appear in the window.
b. Enter the multiplicand [13] and strike the Plus Bar.
c. Enter the multiplier [12] and strike the Plus Bar. The product will print automatically [156].

(30)

JOB No. 8 (Cont'd.)

Printing Calculators

1. Olivetti, Underwood, and Underwood-Olivetti

a. Enter the multiplier [12].

b. Depress the Multiplier Key ㉔.

c. Enter the multiplicand [13].

d. Depress the Multiplication Key ㉒. The product [156] will print automatically.

2. Remington Rand

a. Enter the multiplicand [13].

b. Position the multiplicand. Strike the Positioning Key ㉝ once for each digit in the multiplier [12], **less one** [Strike once].

c. Multiply

(1) **Machines with Multiplication Keyboard** ㉓.
Depress Multiplication Keys for each digit in the multiplier [12], moving from left to right [depress 1, then 2]. The product [156] will print automatically.

(2) **Machines with Multiplication Lever** ㉒.

(a) Push the Multiplication Lever away from you and hold it until the machine operates the number of times indicated by the first digit at the extreme left of the multiplier [1 of 12]. Release the Multiplication Lever when the desired number of cycles has been attained.

(b) Repeat Step (a) for the remaining digits in the multiplier, moving from left to right. The product [156] will print automatically.

JOB No. 8 (Cont'd.)

Name_____

Printing Calculators

```
      *  <
    1 <  <
   12 <  <  X
   13    =
  156 *  <
```

Olivetti, Underwood, and Underwood-Olivetti

```
                *
              1 v
1            13
2             13

            156 *
```

Remington Rand

(21) 8,513 × 85 = 723605

(22) 724 × 456 = 330144

(23) 8,582 × 47 = 403354

(24) 466 × 153 = 71298

(25) 4,111 × 53 = 217883

Answers

21	
22	
23	
24	
25	

Comparison of Standard with Automatic Multiplier and Printing Calculator Machines: 4,972 × 365.

The advantages of automatic multipliers and printing calculators are accentuated when digits of the multiplier total a high value [365 = 3 + 6 + 5 = 14].

```
                *
      49.72
      49.72
5     49.72
      49.72
      49.72
      497.20
      497.20
60    497.20
      497.20
      497.20
      497.20
      4.972.00
300   4.972.00
      4.972.00
      18.147.80*
```

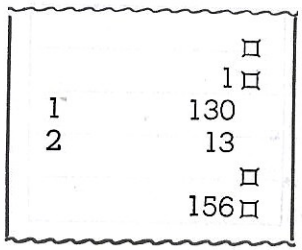
Standard Machine

```
                *
      49.72
                365
      18.147.80*
```

Automatic Multiplier

```
      *  <
  365 <  <  X
 4972    =
1814780 *  <
```

Printing Calculator



Underwood Sundstrand

(26) 348 × 62 = 21576

(27) 1,720 × 134 = 230480

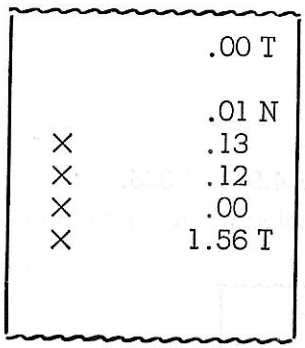
(28) 172 × 71 = 12212

(29) 2,841 × 142 = 403422

(30) 386 × 412 = 159032

Answers

26	
27	
28	
29	
30	



Victor

Timed Drill

(1) 35,365 × 859 = 30378535

(2) 6,589 × 32 = 210848

(3) 43 × 21 = 903

(4) 7,187 × 414 = 2975418

(5) 718 × 62 = 44516

(6) 59,483 × 683 = 40626889

(7) 7,068 × 8 = 56544

(8) 976 × 719 = 701744

(9) 257 × 51 = 13107

(10) 91,483 × 376 = 34397608

Timed Drill

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

3. Underwood Sundstrand

a. Enter the multiplicand [13].

b. Position the multiplicand by striking the 0 key once for each digit in the multiplier [12], **less one** [Strike once].

c. Multiply

(1) **Machines with Multiplication Keyboard** ㉓.
Depress Multiplication Keys for each digit in the multiplier [12], moving from left to right [depress 1, then 2]. The product [156] will print automatically.

(2) **Machines with Multiplication Lever** ㉒.

(a) Move the Multiplication Lever to the number represented by the first digit at the extreme left of the multiplier [1 in 12].

(b) Depress the Multiplier Key ㉔.

(c) Repeat Steps (a) and (b) for each of the remaining digits in the multiplier moving from left to right. The product [156] will print automatically.

4. Victor

a. Push the Control Lever ⑦ away from you. An X should appear in the window.

b. Enter the multiplicand [13] and strike the Plus Bar.

c. Enter the multiplier [12] and strike the Plus Bar. The product will print automatically [156.]

Timed Drill

Do Timed Drill Problems (1) to (10) in the usual manner.

9 SPEED DRILL ADDITION

The Speed Drills in this book are designed to aid you to increase speed and accuracy in operating the ten-key adding-listing machine.

This drill contains 16 problems of 120 strokes each, a total of 1,920 strokes. In completing this drill you should strive constantly to improve both speed and accuracy.

1. Complete each problem once, writing the answer in the space at the right of the page.

2. Complete the drill again, this time keeping a close check on the time in minutes and seconds.
   a. If the second answer is the same as the first, place a check mark (√) beside the first answer.
   b. If the second answer is not the same as the first, write the second answer alongside the first answer.

3. Record in the Time Record at the right the time that was required to complete the drill.

4. Complete the drill again and again during the time allotted by your instructor. Record the number of minutes and seconds required each time, trying constantly to increase your speed.

5. When you have spent the allotted time on the drill, draw a circle around your fastest time in the Time Record form.

JOB No. 9
SPEED DRILL ADDITION

Name _____ Period _____ Date _____

No. of Errors _____ Rating _____

(1)	(2)	(3)	(4)
.06	1.85	2,524.38	.03
1.48	26.02	873.60	544.25
10.83	.26	9.71	2.57
2.63	15.05	4,656.58	90.79
973.18	235.17	2.26	322.14
17.52	599.60	.37	.03
.20	2,526.43	3,296.73	876.79
9,842.53	96.88	823.99	.45
.90	8,508.26	7.18	183.53
7,665.15	38.40	676.23	6.99
9.94	1.10	3.52	9,687.05
979.25	8,058.33	576.36	3.74
55.62	50.37	6.02	.06
.07	.31	.98	728.02
314.59	57.93	390.55	28.88
8.89	9,872.99	375.93	6.82
7,691.70	.44	.18	264.89
9.99	7.48	41.51	4,392.90
168.07	180.37	3.26	.17
8.34	47.80	68.65	39.57
3,414.45	6.39	47.70	.12
6.43	1.01	2.79	922.46
4,226.80	995.69	.04	2.47
76.03	4,644.66	813.95	2,204.22
4,710.15	7.17	7.90	308.16
4.80	2.74	73.51	2,929.58
32.61	528.36	8,261.60	1.77
9,850.03	16.54	222.50	1,341.11
80.20	.70	263.83	324.80
39.74	49.21	14.31	9,652.24
50202.18	34592.51	21546.12	34866.61

Time Record		
No.	Time	
	Min.	Sec.
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Answers

1	
2	
3	
4	

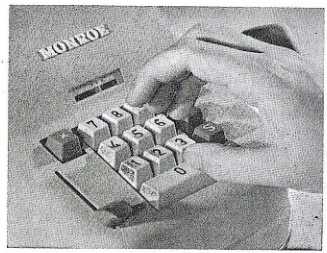
JOB No. 9 (Cont'd.)

(5)	(6)	(7)	(8)
.93	5.33	3.58	80.86
2.19	2.32	4,215.16	6.02
604.91	19.00	.21	.24
4,001.37	64.74	506.97	30.21
.02	9,066.19	.51	59.00
92.98	26.64	93.03	3,940.41
798.20	67.00	203.65	1.90
27.42	4.83	4.83	2.98
.15	9,430.13	204.12	.65
7,639.28	55.22	9.51	14.28
8.46	5.81	6,698.12	31.04
2,436.88	.09	3.55	.05
476.34	8,737.99	84.09	6.88
.09	.25	604.21	547.79
269.93	51.03	3,205.63	98.55
8.30	2.40	52.51	4,387.01
212.75	64.30	.27	26.41
7.70	8.99	990.47	.18
45.29	8,216.40	86.74	777.56
5.39	875.61	.84	.82
519.89	11.94	8,079.58	6,974.31
1.02	6.16	77.30	89.94
2,444.20	7,319.67	.47	7,962.03
.14	800.56	27.78	433.29
2.37	983.77	31.07	.75
7,496.60	.75	189.94	2,012.34
698.19	844.42	8,913.42	4,007.76
6.94	85.22	796.48	.77
531.09	930.33	9.64	2,269.05
3,873.49	5.41	.81	5,123.36
32212.52	42692.50	35094.49	38886.44

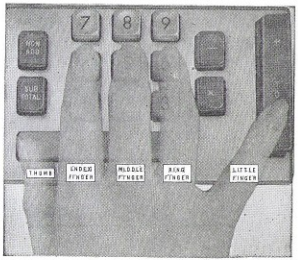
Answers

5	
6	
7	
8	

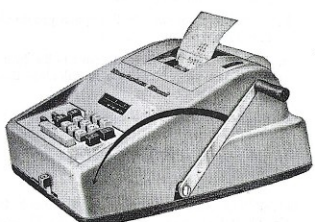
JOB No. 9 (Cont'd.)



Do Not Look at the Keyboard.
4, 5, and 6 Keys Are Your "Home Row"



Strike the Total Key with Your Right Little Finger.



Pull the Operating Handle Toward You.

Name_____

(9)	(10)	(11)	(12)
.58	5.56	68.43	8,507.56
16.96	97.27	47.50	78.82
4.01	2,871.25	115.72	410.88
171.34	53.20	22.19	.38
1,200.61	2.08	13.08	56.46
.12	6,011.38	1,258.85	7.35
590.35	195.05	513.06	.82
892.55	1,403.35	981.86	17.41
3,876.52	58.12	1,134.18	7,113.90
397.18	.24	50.93	2.60
5,500.28	.01	1,334.09	958.35
240.18	70.99	9.22	40.13
11.35	93.11	.62	1.93
673.78	6,134.68	1,654.75	.55
9.49	2.92	7.36	177.68
9.93	5,247.66	42.80	490.32
229.65	56.03	5.08	56.86
40.85	4.30	4,834.97	2,542.11
40.73	4.59	.75	6.29
393.04	70.78	9,686.67	70.92
3.98	.37	8.99	7,181.89
.04	6.03	4.90	45.76
35.27	69.44	330.74	7.94
4,186.33	4,063.00	342.91	.05
775.69	.67	8.29	6,349.60
48.71	428.75	40.02	.23
9.82	7.84	3.76	3,068.90
.90	3,925.97	.90	9.20
.07	1.74	.04	334.94
40.02	908.28	7.70	77.40
19400.33	31641.66	22530.36	37617.23

Answers

9	
10	
11	
12	

(13)	(14)	(15)	(16)
1.54	654.74	20.23	27.04
2,984.07	3,248.75	9,172.56	1,074.49
64.55	101.20	784.06	852.46
461.88	64.40	386.94	631.47
27.22	517.52	8,959.08	108.35
3,048.03	702.05	436.90	5.01
365.00	5,699.13	1,205.84	10.61
703.91	653.21	21.63	8,656.22
3.75	3.35	407.65	1.56
11.54	4,012.85	5,820.73	250.23
365.06	760.86	7,316.42	8.32
77.37	99.16	4.66	2,971.74
3,388.31	310.28	202.33	.23
794.17	7,090.47	2,011.99	7,861.44
6,099.91	582.98	4.84	98.09
90.38	7,909.38	.55	51.09
232.55	801.84	370.62	376.52
9,866.30	84.20	7,048.97	3,559.53
42.98	51.16	1.61	5,619.68
7,714.12	416.43	117.03	935.30
914.86	.85	899.88	8,169.74
504.22	797.62	152.69	83.67
647.02	73.94	5.50	7,716.04
9,759.85	97.97	663.93	8,057.92
1.84	5,639.32	7,819.72	832.49
48140.43	23.66	53836.36	57959.24

Answers

13	
14	
15	
16	

Three-Minute Checkup Results

Number of problems completed.....	____	Number of wrong answers.....	____
Gross strokes..... (Multiply 120 by number of problems completed)	____	Number of correct answers.....	____
Minutes.....	3	Net strokes..... (Multiply 120 by number of correct answers)	____
Gross strokes a minute..... (Divide gross strokes by 3)	____	Net strokes a minute..... (Divide net strokes by 3)	____

Three-Minute Checkup

Before proceeding with the Three-Minute Checkup, erase the answers for all problems of the drill.

To complete the Three-Minute Checkup:

a. Do as many problems in the Speed Drill as possible in three minutes.

b. Record each answer in the space provided at the right of the page.

c. At the end of the allotted time use the form at the bottom of this page to calculate the results of the checkup.

d. Record results on the Speed Drill Record, page 115.

Give the completed job to your instructor.

NOTE: Your next assignment in this book is Job No. 11. Before proceeding with Job No. 11, ask your instructor about Job No. 10, which is Test No. 1.

11 SHORT-CUT MULTIPLICATION ZEROS IN MULTIPLIER

Warm-Up Drill

Complete Warm-Up Drill A, page 10.

Short-Cut Multiplication

The multiplier and the multiplicand are both called "factors."

In machine calculation it is advantageous to use as the multiplier the factor whose digits total the least value. This will keep machine operations at a minimum.

When both factors have digits of high value, it may be advantageous to use the short-cut method of multiplication. This method of multiplication is used only with standard machines and the Remington Rand Printing Calculator, which has a Short-Cut Key ㊲. If you are operating any other machine, complete these problems in the usual manner.

Multiplication by the short-cut method combines repeated addition and repeated subtraction. It is used to reduce the number of machine operations in completing multiplication problems when the digits 7, 8, or 9 appear in the multiplier.

Standard Machines

(See next page for Remington Rand Printing Calculator with Short-Cut Key)

To Complete Problems (1) to (15):

1. Enter the multiplicand in the keyboard [9].
2. Whenever 7, 8, or 9 appear as digits in the multiplier:
   a. Subtract the digit from 10 to get its complement* [10 − 8 = 2].
   b. Repeat subtract for the amount of the complement (instead of repeat adding the original digit) [repeat subtract 9 twice].

(Continued)

*The complement of a number is the difference between the number and the next higher power of 10, i.e., 1, 10, 100, 1,000, etc. For example, the complement of 70 is 30 (100 − 70 = 30), the complement of 6 is 4 (10 − 6 = 4), and the complement of 9 is 1 (10 − 9 = 1).

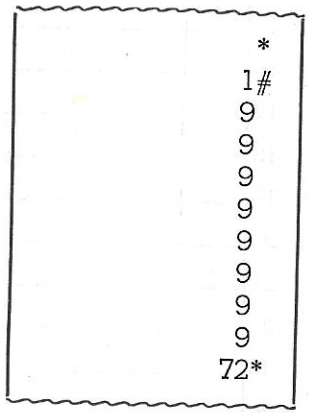
JOB No. 11 SHORT-CUT MULTIPLICATION ZEROS IN MULTIPLIER	Name _____ Period _____ Date _____	No. of Errors _____ Warm-Up Drill Strokes _____ Rating _____

Short-Cut Multiplication

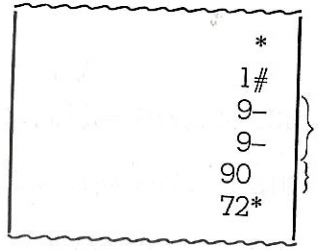
(1) 9 × 8 = 72
(2) 68 × 29 = 1972
(3) 121 × 94 = 11374
(4) 11,855 × 97 = 1149935
(5) 53,627 × 96 = 5148192

Answers

1	
2	
3	
4	
5	

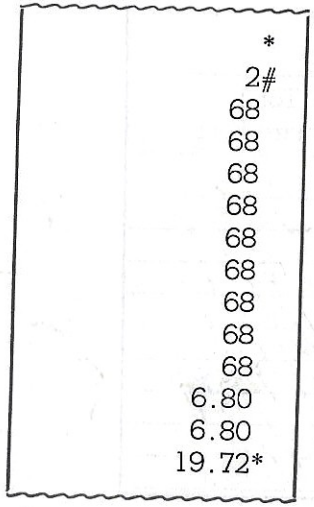


Regular Multiplication
8 Listings

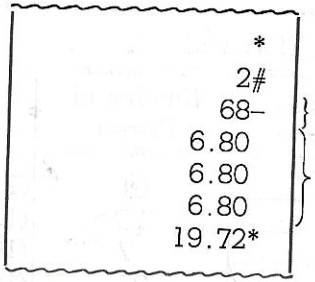


−9 × 2 = −18
9 × 10 = 90
72

Short-Cut Method
3 Listings

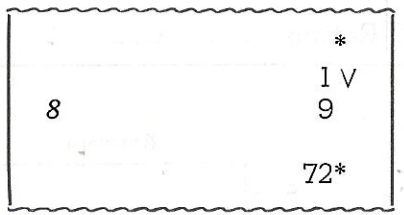


Regular Multiplication
11 Listings



−68 × 1 = −68
680 × 3 = 2,040
1,972

Short-Cut Method
4 Listings



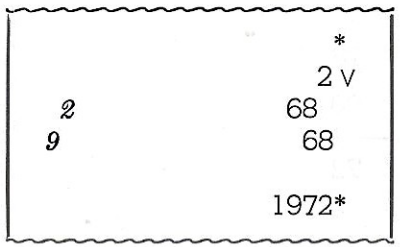
(6) 69,846 × 98 = 6844908

(7) 16,523 × 89 = 1305317

(8) 8,792 × 882 = 7754544

(9) 229 × 2,983 = 683107

(10) 949 × 982 = 931918



Remington Rand
Printing Calculator
with Short-Cut Key

(11) 489 × 2,818 = 1377902

(12) 918 × 3,982 = 3655476

(13) 8,956 × 1,891 = 16935796

(14) 109 × 892 = 97228

(15) 1,982 × 2,919 = 5785458

Answers

6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

TEXTILES

Size in Feet Length Width	Square Feet of Each Piece	Number of Pieces	Total Square Feet
6 × 18	108	61	(16) 6588
6 × 27	162	13	(17) 2106
9 × 18	162	7	(18) 1134
9 × 27	243	22	(19) 5346
9 × 36	324	16	(20) 5184
12 × 18	216	19	(21) 4104
12 × 48	576	28	(22) 16128
18 × 36	648	37	(23) 23976
18 × 48	864	8	(24) 6912
36 × 48	1728	9	(25) 15552

c. Strike the 0 key to move the multiplicand one place to the left.
d. Add 1 to the next digit to the left in the multiplier. [0 + 1 = 1. Add 9 once.]

3. Whenever 1, 2, 3, 4, 5, or 6 appear as digits in the multiplier, repeat add in the usual manner.
4. Take a total [72].

Remington Rand Printing Calculator with Short-Cut Key

To Complete Problems (1) to (15):

1. Enter the multiplicand on the keyboard [9].
2. Position the multiplicand [It is not necessary to depress the Positioning Key since one digit less one = 0].
3. Whenever 7, 8, or 9 appear as digits in the multiplier:
   a. Subtract the digit from 10 to get its complement [10 − 8 = 2].
   b. Depress the Short-Cut Key ㊲.
   c. Push the Multiplication Lever away from you until the machine operates the number of times indicated by the complement [2]. The multiplier digit [8] will appear at the extreme left of the tape.
4. Whenever 1, 2, 3, 4, 5, or 6 appear as digits in the multiplier, multiply in the usual manner.
5. The machine will total automatically [72].

To Complete Problems (16) to (25):

Find the Total Square Feet:

1. Multiply the Length by the Width of each piece and record the answer in the Square Feet of Each Piece column.
2. Multiply the Square Feet of Each Piece by the Number of Pieces and record your answer in the Total Square Feet column.

Zeros in Multiplier

If a zero appears in the multiplier, special instructions apply if you are operating a standard machine, a Remington Rand Printing Calculator with a Multiplication Lever, or an Underwood Sundstrand Printing Calculator.

On all other machines, multiply as usual.

1. Multiply in the customary manner for all digits in the multiplier other than zeros.
2. When a zero appears in the multiplier:

   a. **Standard Machines**

   (1) If a zero appears as the units digit (last digit to the right) in the multiplier, strike the 0 key once and proceed with the next digit.

   (2) If a zero appears within the multiplier, strike the 0 key for the zero and proceed to the next digit by striking the 0 key a second time.

   b. **Remington Rand Printing Calculator with Multiplication Lever**
   Pull the Multiplication Lever toward you for each zero and proceed to the next digit. (For all other digits, 1–9, the Multiplication Lever is pushed away from you.)

   c. **Underwood Sundstrand Printing Calculator**
   If a zero appears as the units digit (last digit to the right) in the multiplicand, engage the Stop Key (38) before multiplying by the last digit in the multiplier.

 Name_____

Zeros in Multiplier

(26) 1,248 × 201 = 250848
(27) 2,398 × 30 = 71940
(28) 7,659 × 840 = 6433560
(29) 421 × 901 = 421421
(30) 878 × 460 = 403880
(31) 411 × 103 = 42333
(32) 2,429 × 720 = 1748880
(33) 3,708 × 409 = 1516572
(34) 4,030 × 305 = 1229150
(35) 4,402 × 570 = 2509140

Answers

26	
27	
28	
29	
30	
31	
32	
33	
34	
35	

```
          *
       26#
     12.48
  1.248.00
  1.248.00
  2.508.48*
```

```
          *
       27#
   239.80
   239.80
   239.80
   719.40*
```

Standard Machine

```
                *
              26 V
2          1248
0           1248  V
1            1248

           250848*
```

```
                *
              27 V
3          2398
0           2398 V

           71940*
```

Remington Rand Printing Calculator with Multiplication Lever

JOB No. 11 (Cont'd.)

Timed Drill

(1) 8,665 × 886 = 7677190

(2) 5,216 × 998 = 5205568

(3) 1,982 × 996 = 2172272

(4) 2,214 × 887 = 1961634

(5) 4,781 × 987 = 4718847

(6) 739 × 881 = 651059

(7) 2,919 × 2,839 = 8287041

(8) 6,695 × 1,982 = 13269490

(9) 973 × 792 = 770616

(10) 4,269 × 191 = 815379

(11) 31,258 × 208 = 6501664

(12) 568 × 406 = 230608

(13) 5,914 × 604 = 3572056

(14) 8,786 × 409 = 3593474

(15) 4,791 × 103 = 493623

(16) 364 × 730 = 265720

(17) 681 × 308 = 209748

(18) 37,282 × 405 = 15099210

(19) 472 × 330 = 155760

(20) 621 × 470 = 291870

Timed Drill

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

JOB No. 11 (Cont'd.)

Timed Drill

Do Timed Drill Problems (1) to (20) in the usual manner.

To Improve Your Work

Accuracy and speed will be increased by strict adherence to the following suggestions:

1. Sit in a comfortable, erect position with your feet flat on the floor.

2. Estimate the answer mentally.

3. Check your tape against the original problem.

12 DECIMALS, FRACTIONS, AND PERCENTAGES

Warm-Up Drill

Complete Warm-Up Drill B, page 27.

Decimals, fractions, and percentages are different methods of expressing part of a whole, or 1.

The following terms have the same value in expressing part of a whole:

.25	Decimal
25%	Per cent
1/4	Fraction
25/100	Fraction expressed as hundredth

Decimals

As in pencil and paper multiplication of decimals, determine the total number of decimal places in the multiplicand and the multiplier. That number of places is pointed off in the product.

In Problem (1) there are two decimal places in the multiplicand [.13] and one decimal place in the multiplier [1.2]. Three decimal places will be pointed off in the product.

Decimal Places in Answer

Record answers accurate to two decimal places. In some instances this means it is necessary to solve the problem for three places to determine the accuracy of the second decimal place.

If the third decimal is 5 or more, increase the second decimal by one. If the third decimal is 4 or less, do **not** increase the second decimal.

Fractions

Ten-key adding-listing machines do not have provisions for fractions, so they must be converted to decimals before entering them in the machine.

JOB No. 12 DECIMALS, FRACTIONS, AND PERCENTAGES

Name _____

Period _____ Date _____

No. of Errors _____

Warm-Up Drill Strokes _____

Rating _____

Decimals

(1) .13 × 1.2 = .156

(2) 1.628 × 32 = 52.096

(3) 68.91 × .367 = 25.28997

(4) .421 × .89 = .37469

(5) 5.832 × 5.76 = 33.59232

(6) 3.38 × .139 = .46982

(7) 9.238 × 8.47 = 78.24586

(8) 48.21 × .621 = 29.93841

(9) 2.148 × 4.37 = 9.38676

(10) 4.765 × .28 = 2.1420

Fractions

(11) 3 1/2 × 23 = 80.5

(12) 53 3/8 × 42 = 2241.75

(13) 47 4/5 × 34 = 1625.2

(14) 91 5/6 × .25 = _____

(15) 73 5/12 × 1.34 = _____

(16) 157 4/7 × 6 1/2 = _____

(17) 29 1/4 × 40 3/4 = _____

(18) 30 4/5 × 21 1/3 = _____

(19) 193 5/6 × 64 1/2 = _____

(20) 92 1/4 × 63 7/8 = _____

Answers

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	22.958325
15	92.378378
16	1024.2115
17	1191.9375
18	657.06564
19	12502.035
20	5892.0075

JOB No. 12 (Cont'd.)

Percentages

(21) 25% of $400.00 = 100.00

(22) 15% of 651.48 = 104.2368

(23) 7 1/2% of 74.00 = 5.55
(74 × .075)

(24) 45% of 11.23 = 5.0535

(25) 12 1/2% of 89.76 = 11.22

Answers

21	
22	
23	
24	
25	

HILTON SPORTS STORE
2683 Longfellow Avenue
Princeton, New Jersey

Date Aug. 12, 19--
James Poe
27 Harding Ave.
Princeton, N.J.

Cash	Charge ✓	C.O.D.	Send	Taken ✓

Quantity	Description	Unit Price	Amount	
15	Baseballs	2.37		(26)
4	Baseball bats	3.71		(27)
12	Baseball caps	1.28		(28)
1	Catcher's mask	7.50		(29)
4	Fielder's gloves	11.39		(30)
	TOTAL			(31)

HILTON SPORTS STORE
2683 Longfellow Avenue
Princeton, New Jersey

Date Jan. 27, 19--
W. G. McCullough
738 William Ave.
Camden, N.J.

Cash	Charge ✓	C.O.D.	Send ✓	Taken

Quantity	Description	Unit Price	Amount	
1	Ping Pong table	47.38		(32)
14	Tennis rackets	16.98		(33)
36	Tennis balls	.39		(34)
5	Golf bags	23.41		(35)
48	Golf balls	.75		(36)
	TOTAL			(37)

Answers

26	35.55
27	14.84
28	15.36
29	7.50
30	45.56
31	118.81
32	47.38
33	237.72
34	14.04
35	119.05
36	36.00
37	452.19

JOB No. 12 (Cont'd.)

To change a fraction to a decimal, divide the numerator by the denominator. The numerator is the upper number in a fraction. The denominator is the lower number in a fraction.

$\frac{1}{4}$ numerator = .25
denominator 4)1.00

The multiplication is completed as a decimal.

The most common decimal equivalents of fractions are given on page 109.

Percentages

Since ten-key adding-listing machines do not have provisions for percentages, the percentages must be converted to decimals before they are entered in the machine.

To change a percentage to a decimal, drop the % sign and move the decimal two places to the left.

Terms

Base is the whole amount which is equal to 100%. [$400 in Problem (21)]

Rate is a part of the base expressed in terms of a per cent. [25% of $400]

To find the **Percentage** of a problem, multiply the Base by the Rate. [$400 × .25 = $100]

To Complete Problems (26) to (37):

1. Multiply the Unit Price by the Quantity, and record your answer in the Amount column.
2. Add the Amount column to determine the Total.

JOB No. 12 (Cont'd.)

To Complete Problems (38) to (42):

1. Convert the fraction in the Quantity column to its decimal equivalent.
2. Multiply the Quantity by the Unit Price and record the answer in the Amount column.
3. Add the Amount column to get the Total of the invoice.

JOB No. 12 (Cont'd.)

Name_____

JOHNSON MANUFACTURING COMPANY
3245 Walnut Street
Detroit, Michigan

INVOICE
63410

Cust. Order No.	Salesman	Our Order No.	Date
62-336	R. Clark	5846	8/21/19--

Sold To: Sandford Hardware Company
2406 Utica Avenue
Des Moines, Iowa

Ship To: Warehouse

Ship Via	F. O. B.	Terms
Rail	Detroit	2/10, n/30

Quantity	Description	Unit	Unit Price	Amount
$2\frac{1}{2}$ doz.	Claw hammers	doz.	23.30	
$\frac{1}{4}$ doz.	Tack hammers	doz.	6.50	
$2\frac{1}{4}$ doz.	Hatchets	doz.	42.00	
$1\frac{1}{2}$ doz.	Rubber mallets	doz.	22.00	
	TOTAL			

Answers

38	58.25
39	1.63
40	94.50
41	33.00
42	187.38

(43)

JOB No. 12 (Cont'd.)

Timed Drill

(1) 14.82 × 4.5 = 66.69

(2) 13.9 × 6.24 = 86.736

(3) 4.7 × .391 = 1.8377

(4) .682 × 37.1 = _____

(5) 86.47 × .31 = _____

(6) 4.91 × .682 = _____

(7) 4.7 × 6.03 = _____

(8) 329.9 × 720 = _____

(9) 8.657 × .48 = _____

(10) 7.41 × .92 = _____

(11) 96 × 8 1/2 = _____

(12) 67 × 35 1/9 = _____

(13) 395 × 5 7/8 = _____

(14) 58 4/5 × 36 = _____

(15) 95 × 6 1/7 = _____

(16) 115 × 9 2/5 = _____

(17) 23 5/8 × 79 = _____

(18) 39 1/3 × 49 1/4 = _____

(19) 18 3/4 × 33 2/3 = _____

(20) 53 5/9 × 29 1/4 = _____

(21) 33% of $479.00 = 158.07

(22) 8% of 180.38 = 14.4304

(23) 25% of 22.00 = 5.50

(24) 16% of 183.78 = 29.4048

(25) 12 1/2% of 14.94 = 1.8675

Timed Drill

1	
2	
3	
4	25.3022
5	26.8057
6	3.34862
7	28.341
8	237528
9	2.155536
10	6.8172
11	816
12	2352.4433
13	2320.625
14	2116.8
15	528.1894
16	235.0
17	1866.375
18	19370025
19	631.25625
20	566.51201
21	
22	
23	
24	
25	

JOB No. 12 (Cont'd.)

Timed Drill

Do Timed Drill Problems (1) to (25) in the usual manner.

To Improve Your Work

Accuracy and speed will be increased by strict adherence to the following suggestions:

1. Estimate the answer mentally.
2. Record answers accurate to two decimal places.
3. Check your tape against the original problem.
4. Record answers rapidly.
   a. Look at the answer on the tape and keep it in mind.
   b. Write the answer in the proper place.

13 FIXED DECIMAL POINT

Warm-Up Drill

Complete Warm-Up Drill C, page 47.

The number of decimal places varies in arithmetical problems. When this occurs, time and effort frequently can be saved by using a fixed decimal point.

A fixed decimal point is considered to be between the fifth and sixth columns of the machine for two main reasons:

1. On most machines this leaves adequate space to the right of the fixed decimal point for decimal accumulations and adequate space to the left of the fixed decimal point for whole number accumulations.

2. Many machines print a comma between the fifth and sixth columns. This comma can be conveniently thought of as a fixed decimal point.

Addition

Decimals

To add decimals on a ten-key adding-listing machine, it is necessary to align decimal points as in pencil and paper computations.

Since the fixed decimal point has been established at five places, all addends* that have fewer than five decimals must be listed with five decimals by adding zeros to the right of the number.

Fractions

Job No. 12 explained that fractions must be converted to their decimal equivalents before entering them in the machine.

*An addend is a number to be added to another number.

JOB No. 13 FIXED DECIMAL POINT	Name _____ Period 5 Date _____	No. of Errors _____ Warm-Up Drill Strokes _____ Rating _____

Addition

Original Numbers	Decimals Aligned for Pencil and Paper Computation	Numbers Entered on Tape
9.4012	9.4012	*
.62	.62	9,401.20
.3526	.3526	620.00
.53754	.53754	352.60
1.43	1.43	537.54
12.01134	12.01134	1,430.00
		12,011.34
		24,352.68*
		Fixed Decimal Point

(1) .840 + 55.3 + 1.08 + 813.90 + 62.309 + .83674 = 934.26574

(2) .78 + 46.18 + 3.303 + 51.3 + 42.7813 + .92867 = 145.27297

(3) 43.9 + .04 + 2.245 + 306.2 + 60.971 + 7.54421 = 420.90021

(4) .26 + 5 + .84040 + 10.98 + 96.241 + 817.2 = 930.52140

(5)	(6)	(7)	(8)
31 1/2	5	57	6
19	8 3/4	8	604 7/8
54 3/8	62	1 1/4	648
269	537	986	3
23	520	73	9 3/8
703 4/5	3 1/7	44 3/4	82
3	507	8	370
51	96	6	95 2/7
27 1/3	12 4/5	37 1/5	52
84	901	90	8
689	23	801	16 2/11
6	58	19 2/3	501
1961.00083	2733.6929	2131.8667	2395.7175

Answers

1	
2	
3	
4	
5	
6	
7	
8	

JOB No. 13 (Cont'd.)

Subtraction

(9) 42.31 − 38.6421 = 3.6679

(10) 192.2 − 42.696 = 149.504

(11) 88.1 − 61.09 = 27.01

(12) 51.8 − 7.45931 = 44.34069

(13) 304 1/2 − 58 1/4 = 246.25

(14) 39 2/3 − 5 1/4 = 34.4167

(15) 44 2/9 − 4 3/5 = 39.6222

(16) 16 1/6 − 8 1/9 = 8.0556

*
9#
42,310.00
38,642.10−
3,667.90*
Fixed Decimal Point

Answers

9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	

Multiplication

(17) .13 × 12 = 1.56

(18) 770.5 × .52 = 400.660

(19) 6.04 × .135 = .81540

(20) 39.1 × .482 = 18.8362

(21) 76 1/8 × 80 1/2 = 6128.0625

(22) 89 3/4 × 35 4/5 = 3213.050

(23) 244 1/2 × 21 2/5 = 5232.30

(24) 53 1/2 × 3 1/8 = 167.1875

*
17#
130.00
130.00
1,300.00
1,560.00*
Fixed Decimal Point

JOB No. 13 (Cont'd.)

Subtraction

Decimals

The decimal point in subtraction problems must also be aligned.

Fractions

Convert fractions to their decimal equivalents and subtract in the usual manner.

Multiplication

Decimals

The number of decimal places in the multiplicand plus the number of places in the multiplier must total five. If they do not total five, zeros must be added to the right of the multiplicand to make the decimal places in the multiplicand and the multiplier total five.

Fractions

Convert fractions to their decimal equivalents and proceed to multiply in the usual manner for decimals.

(46)

JOB No. 13 (Cont'd.)

WARM-UP DRILL C

During the first five minutes of the period do Warm-Up Drill C below, following the usual procedure. Each problem contains 40 strokes.

(1)	(2)	(3)
6,406.27	889.08	491.69
9.67	.76	.03
4.87	1.40	652.68
.50	8.94	4,759.85
.71	.55	.22
836.60	4,622.23	246.16
533.86	7,529.88	3.62
27.26	991.17	24.71
6,855.03	58.72	775.70
41.24	28.40	75.58
14716.01	56131.43	2030.24

(4)	(5)	(6)
67.48	4.41	3,425.05
37.04	7.63	9.72
1.50	865.95	66.04
28.42	.51	24.05
1.32	5,375.19	794.11
353.27	84.16	1.79
174.68	689.10	8.05
304.82	87.00	83.60
769.39	5.86	5.38
.96	633.90	107.24
1738.88	7753.91	4525.03

Name_____

DANIELS DISTRIBUTING COMPANY
1369 River Drive
Milwaukee, Wisconsin

INVOICE 5395

Cust. Order No.	Salesman	Our Order No.	Date
P-782	G. Graham	457	11/19/19-

Sold to:	Ship to:
Sunset Meat Market	Same
1801 Broadway	
Hartford, Conn.	

Ship Via	F.O.B.	Terms
Freight	Milwaukee	2/10, n/30

Quantity	Description	Unit	Unit Price	Amount
48¼ lbs.	Pork Sausage	lb.	.23	11.0975
72½ lbs.	Boiled ham	lb.	.56	40.6000
83¼ lbs.	Lard	lb.	.17½	14.56875
40½ lbs.	Bacon	lb.	.51½	20.8575
23¼ lbs.	Luncheon meat	lb.	.72½	16.85625
	Total			108.09

40.5
.51.5
2025
405
2025
20,855

Answers	
25	
26	
27	
28	
29	
30	

JOB No. 13 (Cont'd.)

Timed Drill

(1)	(2)	(3)	(4)
5	9 1/3	6	67
7 1/4	638	89 1/3	1
2	7 1/2	5	47
54	8	266 1/2	158 2/3
847	754	54	1 2/3
19 1/2	82 7/8	4	34
6	24	37 3/8	240 7/8
58	433	150	853
5	418	26	46
24,593	64 1/8	5	9 1/9
4 7/12	5	21	4
47	15	6 5/12	84 1/4
1,079.3333	2456.6333	670.6250	1545.5028

Timed Drill

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

(5) 96.49 − 4.0318 = 92.4582

(6) 81.894 − 6.271 = 75.623

(7) 536 1/2 − 22 1/3 = 514.1667

(8) 142 3/4 − 100 2/5 = 42.35

(9) 76.678 × 18.7 = 1433.8786

(10) 8,756. × 7.34 = 64269.04

(11) 79 1/8 × 29 1/2 = 2331.1875

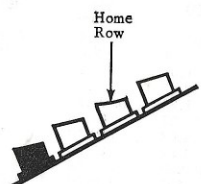
(12) 3 4/5 × 83 3/4 = 318.250

JOB No. 13 (Cont'd.)

Timed Drill

Do Timed Drill Problems (1) to (12) in the usual manner.

Correct Position at Machine



The "Home Row" Keys (4, 5, and 6) Are Concave

14 DISCOUNT AND NET AMOUNT

Warm-Up Drill

Complete Warm-Up Drill C, page 47.

Trade discount is a percentage deducted from the list or catalog price. A trade discount may be offered to dealers as their margin of profit or as a reduction from the catalog price to meet varying market conditions.

Cash discount is a percentage deducted from the amount of an invoice for payment within a specified time. An invoice with the terms 2/10, n/30, means the customer may take a 2% discount if the account is paid within 10 days of the invoice date. Otherwise the invoice must be paid net, in full, within 30 days.

Discount

Gross amount is the price before deducting discounts.

Discount rate is the per cent to be deducted from the gross amount.

Discount is the amount deducted from the gross amount.

Multiply the gross amount [624.16] by the discount rate [.125] to find the discount [78.02].

Net Amount

Net amount is the price after deducting discounts.

Net amount per cent is the difference when the rate is subtracted from 100%.

Multiply the gross amount [624.16] by the net amount per cent [.875] to find the net amount [546.14].

JOB No. 14 DISCOUNT AND NET AMOUNT	Name _____ Period _____ Date _____	No. of Errors _____ Warm-Up Drill Strokes _____ Rating _____

Discount

\$624.16 Gross Amount = 100%
×.125 Discount Rate
\$ 78.02 Discount = 12 1/2%

Find the discount:

	Gross Amount		Discount Rate		
(1)	\$624.16	less	12 1/2%	=	78.02
(2)	894.79	less	7 1/2%	=	67.10925
(3)	147.15	less	37 1/2%	=	55.18125
(4)	86.55	less	15%	=	12.9825
(5)	562.50	less	17 1/2%	=	98.4375

Net Amount

\$624.16 Gross Amount = 100%
×.875 Net Amount Per Cent (100% − 12 1/2% = 87 1/2%)
\$546.14 Net Amount = 87 1/2%

Find the net amount:

	Gross Amount		Discount Rate		
(6)	\$624.16	less	12 1/2%	=	546.14
(7)	847.76	less	15%	=	720.596
(8)	11.30	less	20%	=	9.04
(9)	798.50	less	22 1/2%	=	618.8375
(10)	638.24	less	30%	=	446.768

Answers

1 _____
2 _____
3 _____
4 _____
5 _____
6 _____
7 _____
8 _____
9 _____
10 _____

JOB No. 14 (Cont'd.)

Discount and Net Amount

$624.16	Gross Amount = 100%
78.02	Discount = 12 1/2%
$546.14	Net Amount = 87 1/2%

Find the discount and net amount:

	Gross Amount		Discount Rate		Discount	Net Amount
(11)	$624.16	less	12 1/2%	=	(a) 78.02	(b) 546.14
(12)	732.48	less	7 1/2%	=	(a) 54.936	(b) 677.54
(13)	236.09	less	12 1/2%	=	(a) 29.51125	(b) 206.58
(14)	79.31	less	25%	=	(a) 19.8275	(b) 59.48
(15)	632.45	less	17%	=	(a) 107.5165	(b) 524.93

Answers

11a	
b	
12a	
b	
13a	
b	
14a	
b	
15a	
b	

```
                    *
                  11#
          {624.16
          {624.16
      5   {624.16
          {624.16
          {624.16
      2 {6,241.60
        {6,241.60
  1   {62,416.00
       78,020.00S
      624,160.00—
      546,140.00CR
```

Fixed Decimal Point

Machine with Credit Balance

```
                    *
                  11 V
          {62416
          {62416
      5   {62416
          {62416
          {62416
      2 {624160
        {624160
  1   {6241600

       7802000*
         62416
          7802—

         54614*
```

Machine Without Credit Balance

JOB No. 14 (Cont'd.)

Discount and Net Amount

It is frequently necessary to find both the discount and the net amount. Instructions for doing this as a continuous operation are given for standard machines. Most automatic multipliers and printing calculators can also find the discount and the net amount in a continuous operation, but for simplicity the instructions are given as two separate operations.

Standard Machines

1. Multiply the gross amount by the discount rate around the fixed decimal point [624.16 × .125. There is a total of 5 decimal places in the multiplicand and the multiplier so no zeros need be added to the multiplicand].
2. Clear the keyboard if it has not already been cleared.
3. Find the discount and net amount.
   a. **Machines with Credit Balances**
      (1) Take a subtotal [78.02000] which will be the discount.
      (2) Strike keys for the gross amount around the fixed decimal point [624.16000].
      (3) Subtract.
      (4) Take a total [546.14000] which will be the net amount. This total will appear as a credit balance on the tape, but disregard the credit symbol when writing your answer.
   b. **Machines Without Credit Balances**
      (1) Take a total [78.02000] which will be the discount.
      (2) Add the gross amount [624.16] into the register.
      (3) Subtract the discount [78.02].
      (4) Take a total [546.14] which will be the net amount.

JOB No. 14 (Cont'd.)

Automatic Multipliers and Printing Calculators

1. Multiply the gross amount [624.16] by the discount rate [.125] to find the discount [78.02000].

2. Multiply the gross amount [624.16] by the complement of the discount rate [1.000 − .125 = .875] to find the net amount [546.14].

3. To prove your work, add the discount to the net amount. The total should be the gross amount.

To Complete Problems (16) to (24):

1. Multiply the Quantity by the Unit Price and write the answer in the Extension column.

2. Add the amounts to find the Total Charge.

3. Find the discount and the net amount (invoice total).

JOB No. 14 (Cont'd.)

Name_____

```
                .00T

                .11N
×            624.16
×              1.25
×               .00
×         78,020.00T

×            624.16
×              8.75
×               .00
×        546,140.00T

              78.02
             546.14
             624.16T
```

Automatic Multiplier (Victor)

```
                  *
              11<
          624.16
                      1 2 5

        78.020.00*
          624.16
                      8 7 5

       546.140.00*
```

Printing Calculator (Olivetti, Underwood, and Underwood-Olivetti)

RICHARD HARDWARE CORPORATION
1620 NORTHERN AVENUE
LEWISTON, MAINE

Sold to: S. O Pearson, 7834 Town St., Los Angeles 33, Calif.

Invoice No. 64281

Date April 27, 19--

Salesman	Order No.	Date Received	Date Shipped	Shipped by
Huff	E-402	4/22/--	4/27/--	Acme

Quantity	Stock No.	Description	Unit Price	Amount	
3 doz.	728	Flashlights	$15.39 doz.	(16) 46	17
24 doz.	104	Light bulbs	2.44 doz.	(17) 58	56
15 qt.	1387	Green paint	1.91 qt.	(18) 28	65
29 cans	578	Putty	.29 can	(19) 8	41
18 jars	372	Rubber cement	.19 jar	(20) 3	42
15 ea.	277	Hammer handles	.08 ea.	(21) 1	20
		Total Charge		(22) 152	98
		Less 12% Discount		(23) 18	36
		INVOICE TOTAL		(24) 134	62

Answers

16	
17	
18	
19	
20	
21	
22	146.41
23	
24	

JOB No. 14 (Cont'd.)

Timed Drill

Find the discount:

	Gross Amount		Discount Rate		
(1)	$509.50	less	42 1/2%	=	216.5875
(2)	820.60	less	27 1/2%	=	225.665
(3)	980.75	less	37 1/2%	=	367.78125
(4)	840.50	less	25%	=	210.125
(5)	100.13	less	39%	=	39.0507

Find the net amount:

	Gross Amount		Discount Rate		
(6)	$ 343.32	less	5%	=	326.154
(7)	1,416.97	less	32%	=	963.5396
(8)	694.36	less	25 1/2%	=	517.2982
(9)	908.89	less	39%	=	554.4229
(10)	211.00	less	76%	=	50.64

Find the discount and the net amount:

	Gross Amount		Discount Rate		Discount		Net Amount
(11)	$100.52	less	30%	=	(a) 30.156	(b)	
(12)	800.00	less	24 1/4%	=	(a) 194.00	(b)	
(13)	295.69	less	35%	=	(a) 103.4915	(b)	
(14)	85.39	less	58%	=	(a) 49.5262	(b)	
(15)	582.14	less	2 1/2%	=	(a) 14.5535	(b)	

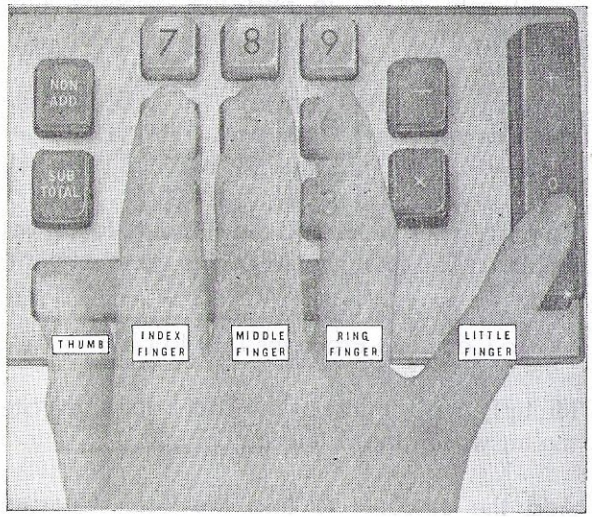
Timed Drill

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11a	
b	
12a	
b	
13a	
b	
14a	
b	
15a	
b	

JOB No. 14 (Cont'd.)

Timed Drill

Do Timed Drill Problems (1) to (15) in the usual manner.



Strike 1, 4, 7 with the Index Finger.

Strike 2, 5, 8 with the Middle Finger.

Strike 3, 6, 9 with the Ring Finger.

(52)

15 SPEED DRILL ADDITION

The Speed Drills in this book are designed to aid you to increase speed and accuracy in operating the ten-key adding-listing machine.

This drill contains 16 problems of 120 strokes each, a total of 1,920 strokes. In completing this drill you should strive constantly to improve both speed and accuracy.

1. Complete each problem once, writing the answer in the space at the right of the page.

2. Complete the drill again, this time keeping a close check on the time in minutes and seconds.
   a. If the second answer is the same as the first, place a check mark (√) beside the first answer.
   b. If the second answer is not the same as the first, write the second answer alongside the first answer.

3. Record in the Time Record at the right the time that was required to complete the drill.

4. Complete the drill again and again during the time allotted by your instructor. Record the number of minutes and seconds required each time, trying constantly to increase your speed.

5. When you have spent the allotted time on the drill, draw a circle around your fastest time in the Time Record form.

JOB No. 15 SPEED DRILL ADDITION	Name _____ Period _____ Date _____	No. of Errors _____ Warm-Up Drill Strokes _____ Rating _____

(1)	(2)	(3)	(4)
8.70	75.40	7,247.85	8.75
.43	8,887.26	2.14	.73
3,165.93	4.92	.64	184.38
60.21	.60	70.94	68.62
.78	56.74	.64	5.54
646.85	7.27	9,218.99	7,812.99
39.44	102.04	2.04	54.97
5.04	6,367.90	91.00	73.08
462.80	2.58	91.54	43.64
25.74	93.64	837.01	626.97
1,821.60	4.20	658.34	100.82
65.52	39.10	5,616.38	.43
3,353.06	86.15	57.31	77.58
7.27	13.48	4.10	70.19
981.87	1,117.96	3,539.83	.57
10.16	7.65	55.75	70.07
2.93	5,358.43	.12	6.94
.07	3.91	32.98	62.61
8,004.15	.32	31.39	6,331.27
67.67	291.12	.29	418.30
2.52	42.29	1,264.12	23.92
1,899.84	856.36	.03	2.48
390.51	93.08	63.52	59.57
9.79	47.47	205.06	920.02
209.39	9.83	64.78	5.62
3.15	.02	703.07	26.31
489.60	9,069.47	9.84	.30
.12	38.47	88.94	84.19
827.64	505.15	698.17	1,816.30
7.84	80.90	50.59	5,459.05
22570.62	33263.21	30707.40	22416.21

Time Record		
No.	Time	
	Min.	Sec.
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Answers

1	
2	
3	
4	

JOB No. 15 (Cont'd.)

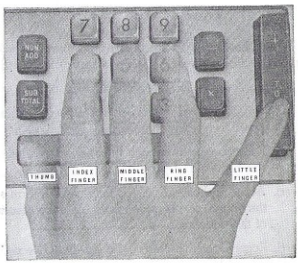
(5)	(6)	(7)	(8)
.43	49.56	7.23	2,539.64
22.94	400.20	9,825.28	42.58
50.24	.57	6.83	97.25
265.23	8,582.08	2.15	2.40
9.05	5.57	.62	1,152.47
55.63	18.53	.01	4,118.20
904.86	82.82	5,905.32	.15
8.02	9,055.36	90.48	9.60
415.08	42.71	5.02	1,601.80
13.78	.23	.95	5.87
.04	5,874.69	2,118.16	6.94
792.85	8.91	36.69	852.05
4,447.94	99.74	71.78	401.60
9.00	5.19	.69	32.82
385.15	.39	4.28	5.69
1.65	32.94	697.60	.31
.07	7,015.61	9.83	80.46
67.95	5,483.98	57.19	.50
32.18	4.07	78.70	1,771.42
174.08	594.97	9,780.83	31.82
608.35	402.03	996.16	6.37
.16	21.16	9,713.15	74.60
7,710.01	.69	167.40	70.28
60.30	72.61	3.23	94.45
68.24	3.79	34.43	646.79
79.63	188.42	.57	396.17
777.32	24.20	7,226.40	.73
12.71	70.87	400.57	36.09
2,513.46	742.33	553.44	783.55
83.62	.90	112.80	6.75
19~~569.92~~			

Answers

5	
6	38885.12
7	47907.79
8	14869.35

JOB No. 15 (Cont'd.)

Correct Position at Machine



Use the Touch Method.
Do Not Look at the Keyboard.

Name_____

(9)	(10)	(11)	(12)
.25	55.95	6.65	271.36
3,098.57	.32	72.63	7.59
88.26	178.66	.54	40.68
2.17	8.58	9,058.79	.48
5.24	458.27	78.25	61.00
100.62	6.61	4.58	589.58
9.24	2,188.54	88.50	9,886.21
.22	90.10	6.10	5.02
5.61	58.27	980.18	97.52
48.08	6,800.00	8,730.72	.74
6,104.11	.89	509.01	377.11
15.08	40.30	115.00	348.98
955.88	.53	2,938.11	18.25
39.70	208.30	53.40	85.97
321.20	224.60	.18	100.04
4.68	1.49	853.64	.40
819.43	3,813.45	4.30	1.90
3,387.91	.79	.90	387.26
135.40	33.95	5,196.37	3,504.00
7.02	4,160.62	73.72	7.91
6.23	1,824.31	32.20	18.49
7.79	72.44	222.64	42.90
369.40	56.38	.67	.06
997.56	37.72	541.47	8,972.54
772.45	.05	9.39	3.96
41.64	7.63	464.56	452.32
97.56	77.96	94.41	99.66
8.63	6.32	36.93	326.72
33.65	996.47	67.96	.57
9.08	416.94	.27	7,119.44

Answers

9	17492.66
10	21826.44
11	30242.07
12	32828.66

JOB No. 15 (Cont'd.)

(13)	(14)	(15)	(16)
8,772.16	.29	54.78	90.04
974.72	7,861.74	6,532.32	8,814.59
2.37	798.42	2,737.89	602.42
537.80	60.14	5,758.03	161.63
877.03	808.72	8,443.25	5.39
3,101.18	1,292.67	19.59	28.32
.29	14.39	8.51	390.40
4,359.44	555.74	161.48	20.66
50.68	9,195.29	.07	120.63
302.45	201.29	329.30	5,759.81
5,368.40	7.46	.91	7,883.60
311.94	839.17	877.00	8,287.70
4,026.62	86.50	7,762.26	25.37
56.00	3,375.18	256.43	612.34
7,911.33	700.23	111.03	4,467.54
81.20	8.43	3,585.16	5,000.69
6,518.75	4,322.39	29.07	5.13
9,757.94	770.49	2,833.02	766.54
.36	325.60	475.08	39.67
2,285.09	3,035.14	469.18	41.98
999.48	3.71	51.40	677.32
615.45	9,010.86	9,524.36	7,898.24
.80	62.25	7,091.66	5.18
1,683.82	608.38	90.04	8,350.24
60.27	1,045.61	984.84	71.54
5865.57	44990.09	58186.66	60126.97

Answers

13	
14	
15	
16	

Three-Minute Checkup Results

Number of problems completed..... Number of wrong answers.....

Gross strokes..... Number of correct answers.....
(Multiply 120 by number of problems completed)

Net strokes.....
(Multiply 120 by number of correct answers)

Minutes..... 3

Gross strokes a minute..... Net strokes a minute.....
(Divide gross strokes by 3) (Divide net strokes by 3)

JOB No. 15 (Cont'd.)

Three-Minute Checkup

Before proceeding with the Three-Minute Checkup, erase the answers for all problems of the drill.

To complete the Three-Minute Checkup:

a. Do as many problems in the Speed Drill as possible in three minutes.

b. Record each answer in the space provided at the right of the page.

c. At the end of the allotted time use the form at the bottom of this page to calculate the results of the checkup.

d. Record results on the Speed Drill Record, page 115.

Give the completed job to your instructor.

16 CHAIN DISCOUNTS

Warm-Up Drill

Complete Warm-Up Drill D, page 59.

A series of two or more trade discounts from the gross amount may be offered. This series of discounts is called a **chain discount.** A chain discount of 20% – 5% means that after 20% has been deducted from the gross amount, 5% more is deducted from the **remaining amount.**

Chain Discounts with a Table

Tables of chain discount net equivalents are available (see pages 110–111) for the most common chain discounts. It is usually faster and more accurate to consult a table rather than compute individually each discount of the chain.

To Complete Problem (1):

1. Find the net equivalent of the chain discount from the table on pages 110–111 [.76].
2. Multiply the gross amount [230.25] by the net equivalent [.76] to find the net amount [174.99].

To Complete Problems (6) to (11):

1. Multiply the Unit Price by the Quantity to get the Amount for each item.
2. Add the amounts to find the gross amount.
3. Find the net equivalent of the chain discount from the table on pages 110–111.
4. Multiply the gross amount by the net equivalent to find the net amount and list it next to (11).
5. Subtract the net amount (11) from the gross amount (9) to get the discount (10).

JOB No. 16 CHAIN DISCOUNTS	Name _____ Period _____ Date _____	No. of Errors _____ Warm-Up Drill Strokes _____ Rating _____

Chain Discounts with a Table

(1) $230.25 less 20% – 5% = 174.99

(2) 88.28 less 25% – 10% – 10% = 53.6301 (.6075)

(3) 409.39 less 33 1/3% – 10% – 2 1/2% = 239.49315 (.585)

(4) 757.76 less 66 2/3% – 10% – 7 1/2% = 441.162 (.2775)

(5) 912.78 less 30% – 7 1/2% = 590.56864 (.6475)

Answers

1	
2	
3	
4	
5	

JACKSON BROTHERS & COMPANY
389 EAST LINCOLN ROAD
HASTINGS, NEBRASKA

Silman Hardware Company
96 First Avenue
Bronx 61, New York

No. 3820
Date July 7, 19—
Ship Via Freight
Terms

Quantity	Description	Unit Price	Amount
3 doz.	Window shades	23.24 doz.	(6) 69.72
2 doz.	Venetian blinds	46.29 doz.	(7) 92.58
3 doz.	Shade rollers	11.32 doz.	(8) 33.96
			(9) 196.26
	Less 15%–10%–5% .726		(10) 53.78
			(11) 142.63

Answers

6	
7	
8	
9	
10	
11	

Chain Discounts Without a Table

(12) 60% – 20% – 5% = .304

(13) 25% – 25% = .5625

(14) 25% – 20% = .60

(15) 20% – 20% – 5% = .608

(16) 30% – 20% = .56

(17) $453.02 less 25% – 20% = 271.812

(18) 449.88 less 20% – 20% – 5% = 362.60328

(19) 620.13 less 30% – 20% – 10% = 313.16565

(20) 960.59 less 25% – 20% – 3% = 559.06338

(21) 45.71 less 50% – 20% – 5% = 17.3698

Answers	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	

FARRELL COSMETICS, INC.
898 Wood Drive ◈ Tulsa 9, Oklahoma

BECK DEPT. STORE
2603 KINSER PIKE
HOUSTON 15, TEXAS

No. 1565
Date Jan. 10, 19—
Ship Via Express
Terms Net

Quantity	Description	Unit Price	Amount
3 doz.	770 TOOTHPASTE	4.89 doz.	14.67
6 doz.	60B TOOTH POWDER	4.89 doz.	29.34
5 doz.	TOOTHBRUSHES	1.76 doz.	8.80
			52.81
	Less 40%–20%		22.06
			25.35

Answers	
22	
23	
24	
25	
26	
27	

Chain Discounts Without a Table

When a table of chain discount net equivalents is not available or if the chain discount does not appear on the table, the net equivalent for any chain of discounts can be determined on your machine.

To Complete Problem (12):

1. The first discount is taken from $1.00 [1.00 less 60% = 1.00 less .60 = .40].
2. The second discount is taken from the remainder [.40 less 20% = .40 less .08 = .32].
3. The third discount is taken from the next remainder [.32 less 5% = .32 less .016 = .304].
4. The net equivalent is .304.

To Complete Problems (22) to (27):

1. Multiply the Unit Price by the Quantity to get the Amount for each item.
2. Add the amounts to find the gross amount.
3. Find the net equivalent of the chain discount on your machine.
4. Multiply the gross amount by the net equivalent to find the net amount and list it next to (27).
5. Subtract the net amount (27) from the gross amount (25) to get the discount (26).

JOB No. 16 (Cont'd.)

WARM-UP DRILL D

During the first five minutes of the period do Warm-Up Drill D below, following the usual procedure. Each problem contains 10 strokes.

(1)	(2)	(3)
6,125.92	3,732.30	295.88
27.06–	93.98–	174.17–
6098.86	3638.32	121.71

(4)	(5)	(6)
895.84	5,171.69	979.63
588.90–	88.95–	988.29–
306.94	5082.74	8.66 Cr.

(7)	(8)	(9)
31,057.74	797.81	7,288.15
5.11–	552.27–	18.80–
31052.63	245.54	7269.35

Name_____

NIEMAN WHOLESALE COMPANY
3248 Penn Avenue
Pittsburgh, Pennsylvania

INVOICE 5117

Cust. Order No.	Salesman	Our Order No.	Date
P689-11	Browne	4-81245	8/18/19-

Sold To:	Ship To:
Lowe & Martin Company	Same
2402 33 Street	
Frankfort, Kentucky	

Ship Via	F.O.B.	Terms
Express	Pittsburgh	2%-10-net 30

Quantity	Description	Unit	Unit Price	Amount
16	Weekend cases	each	12.47	199.52
7	Pullman cases	each	19.47	136.29
11	Hatbox cases	each	11.67	128.37
13	Train cases	each	11.67	151.71
15	Two-suiter cases	each	19.47	292.05
				907.94
	Less 30%-20%-10%			450.34
	Total			457.60

Answers

28	
29	
30	
31	
32	
33	
34	
35	

Timed Drill

(1) $178.69 less 25% − 20% − 5% = 101.8533

(2) 960.11 less 33 1/3% − 10% − 7 1/2% = _____

(3) 436.18 less 25% − 20% = _____

(4) 74.13 less 40% − 20% − 10% = _____

Timed Drill

1 _____
2 _____
3 _____
4 _____

DANIELS DISTRIBUTING COMPANY
1369 River Drive
Milwaukee, Wisconsin

INVOICE 5203

Cust. Order No.	Salesman	Our Order No.	Date
178-62-39	Maxwell	64391	8/19/--

Sold To:	Ship To:
Modern Fabrics	Warehouse
4512 49 Street	
Jefferson City, Mo.	

Ship Via	F. O. B.	Terms
Express	Milwaukee	

Quantity	Description	Unit	Unit Price	Amount
250 yds.	Nylon net 71 M 641	yard	.38	95.00
650 yds.	Acetate satin 71 M 784	yard	1.90	1235.00
375 yds.	Taffeta 71 M 938	yard	.62	232.50
475 yds.	Shantung 71 M 839	yard	1.85	878.75
				2441.25
	Less 15%-10%-5%			168.90
	Total			1972.35

Timed Drill

5 _____
6 _____
7 _____
8 _____
9 _____
10 _____
11 _____

Timed Drill

Do Timed Drill Problems (1) to (11) in the usual manner.

To Improve Your Work

Accuracy and speed will be increased by strict adherence to the following suggestions:

1. Clear your desk of everything except materials needed for this class.
2. Use a rhythmic, bounce touch.
3. Do not pause between strokes.
4. Depress each key fully.
5. Record answers accurate to two decimal places.

650
1.90
95 00
650
1235.00

17 CONSTANT MULTIPLICATION

Warm-Up Drill

Complete Warm-Up Drill D, page 59.

On standard machines these problems are completed in the customary manner.

Automatic Multipliers

1. **Burroughs.** Complete these problems in the usual manner.
2. **Monroe**
   a. Enter the constant multiplicand [2.13] and depress the Multiplier Key.
   b. Engage the Accumulation Control Key.
   c. Enter the multiplier on the keyboard [56] and depress the Multiplication Key. The product of the first extension is printed [119.28].
   d. The constant [2.13] was automatically retained, so it does not have to be entered again.
   e. Repeat Step c for each remaining multiplier.
3. **Olivetti, Underwood, and Underwood-Olivetti**
   a. Enter on the keyboard the constant multiplicand and the last digit of the first multiplier [2.13 and the 6 in 56]. Depress the Multiplication Key.
   b. Hold the Repeat Lever to the left (on position) continuously.
   c. Enter the tens digit in the multiplier [5]. Simultaneously depress the Multiplication Key and Multiplication Total Key. The product will print [119.28].
   d. Depress the Backspace Key to remove all digits except those in the constant multiplicand [backspace twice].

JOB No. 17 CONSTANT MULTIPLICATION	Name _____ Period _____ Date _____	No. of Errors _____ Warm-Up Drill Strokes _____ Rating _____

Automatic Multipliers

```
        *
      1#
    2.13×
      56=
  119.28*
      83=
  176.79*
    1.22=
  259.86*
    5.55=
1.182.15*
    2.67=
  568.71*
```

Monroe

```
        *
      1<
    2.13
  119.28*
    2.13
  176.79*
    2.13
  259.86*
    2.13
1.182.15*
    2.13
  568.71*
```

56 83 122 555 267

Olivetti, Underwood, and Underwood-Olivetti

(1) 56 units @ $2.13 per unit = 119.28
(2) 83 units @ $2.13 per unit = 176.79
(3) 122 units @ $2.13 per unit = 259.86
(4) 555 units @ $2.13 per unit = 1182.15
(5) 267 units @ $2.13 per unit = 568.71

(6) 40 hours @ $2.38 per hour = 95.20
(7) 37 hours @ $2.38 per hour = 88.06
(8) 35 hours @ $2.38 per hour = 83.30
(9) 38 hours @ $2.38 per hour = 90.44
(10) 34 hours @ $2.38 per hour = 80.92

Answers

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

JOB No. 17 (Cont'd.)

(11) 371 × 7.21 = 2674.91 (16) $ 89.75 × 23.47 = 2106.4325

(12) 1,492 × 7.21 = 10758.32 (17) 949.62 × 23.47 = 22282.8814

(13) 273 × 7.21 = 1968.33 (18) 352.41 × 23.47 = 8271.0627

(14) 168 × 7.21 = 1211.28 (19) 808.73 × 23.47 = 18980.2931

(15) 856 × 7.21 = 6171.76 (20) 66.00 × 23.47 = 1549.02

Answers

11
12
13
14
15
16
17
18
19
20

Printing Calculators

	.00T
	.01N
×	2.13
×	.56
×	.00
×	119.28T
×	2.13
×	.83
×	.00
×	176.79T
×	2.13
×	1.22
×	.00
×	259.86T
×	2.13
×	5.55
×	.00
×	1,182.15T
×	2.13
×	2.67
×	.00
×	568.71T

Victor

	* <
	1< <
	213< < ×
	56 =
	11928* <
	83 =
	17679* <
	122 =
	25986* <
	555 =
	118215* <
	267 =
	56871* <

Olivetti, Underwood, and Underwood-Olivetti

e. Enter the units digit of the next multiplier and depress the Multiplication Key [3].

f. Repeat Steps b, c, d, and e for each remaining multiplier.

4. Victor

a. Move the Control Lever away from you to the multiply position so an X appears in the window.

b. Move the Constant Lever toward you so a C appears in the window.

c. Enter the constant multiplicand on the keyboard [2.13] and depress the Plus Bar.

d. Enter the first multiplier on the keyboard [56] and depress the Plus Bar. The product [119.28] and the constant multiplicand will automatically print on the tape.

e. Repeat Step d for each multiplier.

f. There are two ways to release the Constant Lever:
   (1) Move it away from you before or during the last calculation.
   (2) Enter 1 on the keyboard, move the Constant Lever away from you, and then depress the Plus Bar.

Printing Calculators

1. Olivetti, Underwood, and Underwood-Olivetti

a. The Automatic Total Lever should be moved to the left so it is on.

b. The Automatic Subtotal Lever should be up so it is off.

c. Enter the constant multiplicand on the keyboard [2.13] and depress the Multiplier Key.

d. Enter the first multiplier [56] on the keyboard and depress the Multiplication Key. The first product will print [119.28].

e. Repeat Step d for each remaining multiplier.

2. Remington Rand

a. Add the number of digits in the constant multiplicand [3] to the number of digits in the largest multiplier [3]. This total [6] is subtracted from the listing capacity of your machine [10-digit machine, 10 − 6 = 4; 13-digit machine, 13 − 6 = 7]. The remainder is the number of zeros to prefix before entering the constant multiplicand.

b. Enter the number of zeros determined in Step a.

c. Enter the constant multiplicand on the keyboard [2.13].

d. Simultaneously depress the Positioning Key ㉝ and the Constant Key ⑤.

e. Move the Constant Lock Lever ⑥ toward you.

f. Multiply by 0 to print the constant multiplicand on the tape.

g. Multiply by the first multiplier. If the multiplier has less digits than the multiplier with the most digits in the series, prefix the multiplier with zeros to equal the largest multiplier [.056]. The product will print automatically [119.28].

h. Reenter the constant multiplicand by depressing the Constant Key.

i. Repeat Steps f, g, and h for each remaining multiplier.

j. Clear constant out of machine by moving Constant Lock Lever away from you and depressing the plus bar.


```
                    *
                  1 V
 0              213  V
 0              213  V
 5              213
 6              213

              11928*
 0              213  V
 0              213  V
 8              213
 3              213

              17679*
 0              213  V
 1              213
 2              213
 2              213

              25986*
 0              213  V
 5              213
 5              213
 5              213

             118215*
 0              213  V
 2              213
 6              213
 7              213

              56871*
```

Remington Rand

Name_____

(21) 504.88 × 34.17 = 17251.7497

(22) 78.40 × 34.17 = 2678.928

(23) 39.25 × 34.17 = 1341.1725

(24) 64.55 × 34.17 = 2205.6735

(25) 189.17 × 34.17 = 6463.9389

(26) 217.66 × 5.75 = 1251.545

(27) 129.40 × 5.75 = 744.05

(28) 6.99 × 5.75 = 40.1925

(29) 53.21 × 5.75 = 305.9575

(30) 49.60 × 5.75 = 285.2

Answers	
21	
22	
23	
24	
25	
26	
27	
28	
29	
30	

1¤
0 21300×
5 2130×
6 213×
¤
11928¤
0 21300×
8 2130×
3 213×
¤
17679¤
1 21300×
2 2130×
2 213×
¤
25986¤
5 21300×
5 2130×
5 213×
¤
118215¤
2 21300×
6 2130×
7 213×
¤
56871¤

Underwood Sundstrand

(31) 45.62 × 121.47 = 5541.4614

(32) 371.46 × 121.47 = _____

(33) 19.32 × 121.47 = 2346.80

(34) 25.75 × 121.47 = 3127.85

(35) 16.48 × 121.47 = 2001.8256

Answers

31 _____
32 _____
33 _____
34 _____
35 _____

Timed Drill

(1) $414.26 × 519 = 215000.94

(2) 29.42 × 519 = _____

(3) 70.65 × 519 = _____

(4) 314.06 × 519 = _____

(5) 63.82 × 519 = _____

(6) 135.81 × 17.55 = _____

(7) 67.52 × 17.55 = _____

(8) 48.31 × 17.55 = _____

(9) 260.55 × 17.55 = _____

(10) 79.61 × 17.55 = _____

Timed Drill

1 _____
2 15268.98
3 36667.35
4 16299.14
5 23122.58
6 2383.4655
7 1184.976
8 847.2405
9 4572.6525
10 1397.1555

3. Underwood Sundstrand

a. Move the Automatic Subtotal Lever to the off position.

b. Add the number of digits in the constant multiplicand to the number of digits, less one, in the largest multiplier [3 + 3 − 1 = 5].

c. Subtract the total in Step b [5] from the listing capacity of your machine [10-digit machine, 10 − 5 = 5; 12-digit machine, 12 − 5 = 7]. The remainder is the number of zeros to prefix before entering the constant multiplicand.

d. Enter the number of zeros determined in Step c.

e. Enter the constant multiplicand on the keyboard [2.13].

f. Depress the Constant ← 0 Key ⓐ.

g. Move the Constant Lock Lever toward you.

h. Multiply by the first multiplier. If the multiplier has less digits than the multiplier with the most digits in the series, prefix the multiplier with zeros to equal the largest multiplier [056]. The product will print automatically [119.28].

i. Reenter the constant multiplicand by depressing the Constant ← 0 Key.

j. Repeat Steps h and i for each remaining multiplier.

k. Before multiplying by the last multiplier, move the Constant Lock Lever away from you.

4. Victor

Follow the same instructions given for the Victor automatic multiplier. See page 62.

Timed Drill

Do Timed Drill Problems (1) to (10) in the usual manner.

18 DIVISION

Warm-Up Drill

Complete Warm-Up Drill C, page 47.

Standard and Automatic Multipliers

(See next page for Printing Calculators)

Division is the most complex of the four arithmetic processes: addition, subtraction, multiplication, and division. Since standard and automatic multipliers are not designed primarily for division problems, it is necessary to solve these problems by the reciprocal method of division.

The reciprocal method is an indirect method of division where the dividend is multiplied by the reciprocal of the divisor.

The reciprocal of a number is obtained by dividing 1.0 by that number. For example, to find the reciprocal of 2:

$$2\overline{)\,1.0} \quad .5 \text{ is the reciprocal of } 2$$

By the reciprocal method, $2\overline{)\,8} = 4$ would be:

$$\begin{array}{rl} 8 & \text{dividend} \\ \times .5 & \text{reciprocal of divisor } 2 \\ \hline 4.0 & \text{quotient} \end{array}$$

The table of Decimal Reciprocals on pages 112–113 makes it unnecessary to divide 1.0 by the divisor to find the reciprocal of the divisor.

All answers for division problems should be rounded to 2 places.

1. Find the reciprocal of the divisor [12] from the table of Decimal Reciprocals on pages 112–113 [.083333].

(Continued)

JOB No. 18 **DIVISION**	**Name** _____ **Period** _____ **Date** _____	**No. of Errors** _____ **Warm-Up Drill Strokes** _____ **Rating** _____

Standard and Automatic Multipliers

Direct Division Method

$$\text{Divisor})\overline{\text{Dividend}}\ \text{Quotient}$$

$$2\overline{)\,8} = 4$$

		*
		1#
	833.33	
	833.33	
6	833.33	
	833.33	
	833.33	
	833.33	
	8.333.30	
	8.333.30	
50	8.333.30	
	8.333.30	
	8.333.30	
100	83.333.00	
	129.999.48*	

Reciprocal Division Method

$$\begin{array}{rl} & \text{Dividend} \\ \times & \text{Reciprocal of Divisor} \\ \hline & \text{Quotient} \end{array}$$

$$\begin{array}{rl} & 8 \\ \times & .5 \\ \hline & 4.0 \end{array}$$

*
8
8
8
8
8
40*

(1) 156 ÷ 12 = 13. (.083333)

(2) 775 ÷ 25 = 31 (.04)

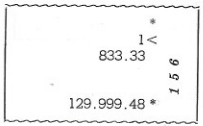
(3) 384 ÷ 24 = 16 (.041667)

(4) 714 ÷ 42 = 17 (.02381)

(5) 884 ÷ 13 = 68 (.076923)

Answers

1	
2	
3	
4	
5	



Automatic Multiplier

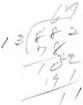
(6) 3,850 ÷ 50 = 77 (.02)

(7) 2,590 ÷ 35 = 74 (.028571)

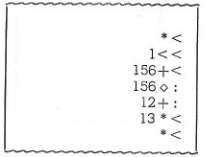
(8) 1,584 ÷ 88 = 18 (.011364)

(9) 11,856 ÷ 304 = 38.99 (.003289)

(10) 8,827 ÷ 13 = 679.0 (.076923)



Printing Calculators



Olivetti, Underwood, and Underwood-Olivetti

(11) 41,667 ÷ 51 = 816.67 (.019608)

(12) 19,845 ÷ 945 = 20.81 (.001058)

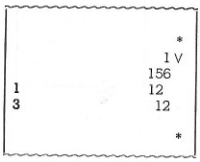
(13) 5,274 ÷ 18 = 292.97 (.055556)

(14) 19,462 ÷ 74 = 262.93 (.013514)

(15) 13,332 ÷ 303 = 44. (.00330)

Answers

6
7
8
9
10
11
12
13
14
15



Remington Rand

2. Enter the reciprocal on the keyboard [.083333]. If the value of the digits for the dividend totals more than the value of the reciprocal digits, enter the dividend on the keyboard and multiply by the reciprocal. (See Job No. 11, if necessary.)

3. Multiply by the dividend [156].

4. Take a total [12999948].

5. Mark off the proper number of decimal places [12.999948] and round to 2 decimals [13]. (See Job No. 12, if necessary.)

Printing Calculators

1. Olivetti, Underwood, and Underwood-Olivetti

a. Add the dividend [156] into the register.

b. Enter the divisor [12] on the keyboard.

c. Depress the Division Key @. The calculator will divide automatically and the dividend, divisor, quotient [13], and remainder, if any, will print on the tape.

2. Remington Rand

a. Add the dividend [156] into the register.

b. Enter the divisor [12] on the keyboard.

c. Position the divisor. Strike the Positioning Key @ so the first digit of the divisor shown in the Digit Indicator is directly below the first digit of the dividend on the tape [Dividend, 156, has 3 digits. Divisor, 12, has 2 digits. Strike Positioning Key once].

d. Depress the Division Key @. The calculator will divide automatically and the dividend, divisor, quotient [13 printed vertically at

(Continued)

the left of the tape], and remainder, if any, will print on the tape.

3. Underwood Sundstrand

a. Add the dividend [156] into the register.

b. Enter the divisor [12] on the keyboard.

c. Position the divisor. Strike the 0 key so the first digit of the divisor shown in the Digit Indicator is directly below the first digit of the dividend on the tape [Dividend, 156, has 3 digits. Divisor, 12, has 2 digits. Strike 0 key once].

d. Depress the Division Key ⑭. The calculator will divide automatically and the dividend, divisor, quotient [13], and remainder, if any, will print on the tape.

4. Victor

a. Push the Control Lever ⑦ away from you. A ÷ should appear in the window.

b. Enter the dividend [156] on the keyboard and strike the Plus Bar.

c. Enter the divisor [12] on the keyboard and strike the Plus Bar. The calculator will divide automatically and the dividend, divisor, quotient [13], and remainder, if any, will print on the tape.

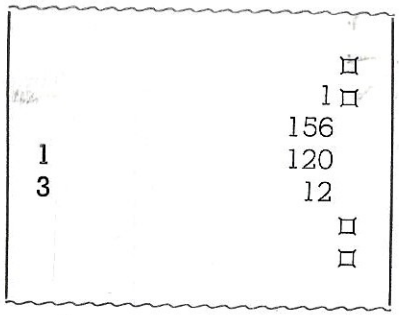
To Complete Problems (16) to (20):

An average is the quotient obtained by dividing the total of a number of figures by the number of those figures.

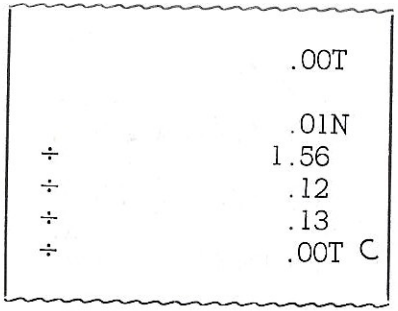
1. Add the 12 numbers in the problem.

2. Divide the total for each problem by 12.

Name_____



Underwood Sundstrand



Victor

	(16)	(17)	(18)	(19)	(20)
	745	52	99	930	24
	43	893	30	25	305
.08333333	734	2	101	45	54
	58	214	115	431	69
	100	44	53	64	92
	401	92	910	22	818
	682	77	106	715	538
	58	96	92	627	24
	22	18	10	475	222
	872	74	5	6	4
	24	810	15	100	59
	281	160	6	4	721
Totals	4020	2532	1542	3444	2930
Averages	336.99	210.99	128.49	295.32	244.16

Answers

16	
17	
18	
19	
20	

Timed Drill

(1) 5,320 ÷ 56 = 94.96

(2) 4,225 ÷ 25 = 169

(3) 16,037 ÷ 203 = 78.61

(4) 4,446 ÷ 342 = 13

(5) 19,800 ÷ 24 = 824.87

(6)	(7)	(8)	(9)	(10)
8	23	789	60	80
58	26	68	350	62
21	119	42	484	990
8	81	19	69	139
9	506	466	984	19
94	44	40	438	796
779	96	906	44	130
83	390	76	263	95
85	396	61	762	31
5	640	214	22	5
31	944	700	312	375
491	95	651	700	26
Totals 1672	3360	4032	4448	2748
Averages 139.33	279.99	335.99	373.99	228.99

Timed Drill

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Timed Drill

Do Timed Drill Problems (1) to (10) in the usual manner.

To Improve Your Work

Accuracy and speed will be increased by strict adherence to the following suggestions:

1. Estimate the answer mentally.
2. Record answers accurate to two decimal places.
3. Check your tape against the original problem.
4. Record answers rapidly.
   a. Look at the answer on the tape and keep it in mind.
   b. Write the answer in the proper places.

19 SPEED DRILL ADDITION

The Speed Drills in this book are designed to aid you to increase speed and accuracy in operating the ten-key listing machine.

This drill contains 28 problems of 40 strokes each, a total of 1,120 strokes. In completing this drill you should strive constantly to improve both speed and accuracy.

1. Complete each problem once, writing the answer in the space at the right of the page.
2. Complete the drill again, this time keeping a close check on the time in minutes and seconds.
   a. If the second answer is the same as the first, place a check mark (√) beside the first answer.
   b. If the second answer is not the same as the first, write the second answer alongside the first answer.
3. Record in the Time Record at the right the time that was required to complete the drill.
4. Complete the drill again and again during the time allotted by your instructor. Record the number of minutes and seconds required each time, trying constantly to increase your speed.
5. When you have spent the allotted time on the drill, draw a circle around your fastest time in the Time Record form.

JOB No. 19 SPEED DRILL ADDITION	Name _____ Period _____ Date _____	No. of Errors _____ Warm-Up Drill Strokes _____ Rating _____

(1)	(2)	(3)	(4)
69.61	71.24	.43	8.24
5.07	6.02	3.61	3,699.96
1.42	.60	72.94	.69
25.81	166.53	5.29	5.00
33.20	3.80	488.20	61.56
68.78	.03	.18	.51
.73	2.61	5.08	461.10
9.80	88.56	8.13	8.75
103.91	513.18	912.58	2.08
.59	.46	9.53	.05
1.32	5.12	44.90	11.82
6490	587.22	6.72	82.35
385.14	1446.37	1557.59	4342.11

(5)	(6)	(7)	(8)
1.70	8.38	1.42	98.06
.06	873.94	3.05	4.74
.97	1.38	.95	23.06
3.32	3.83	2.96	7.20
4.73	82.72	9.45	28.64
71.31	2,447.78	2.73	3.72
2223	4.05	9.07	9.13
28.06	44.43	7.30	72.19
22.42	.25	8,594.98	7.10
42.51	.02	9,619.52	6.07
70.48	.82	1.44	5.13
10.91	20.66	.44	6.46
2928.70	3488.26	18253.31	2771.50

Time Record		
No.	Time	
	Min.	Sec.
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Answers

1	
2	
3	
4	
5	
6	
7	
8	

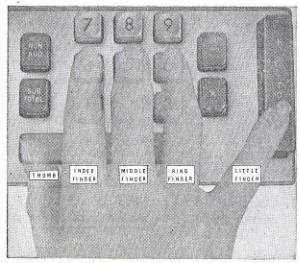
(69)

(9)	(10)	(11)	(12)
.64	9.36	6.85	9.85
2.13	.20	40.93	68.51
39.20	346.64	7.49	5.39
.15	66.73	.86	46.54
3.45	2.35	9.56	1.72
85.49	7.53	75.56	.23
1.59	18.29	34.99	2.58
.13	9.02	6.49	4.68
691.63	6.35	80.90	31.52
6.56	379.14	979.39	984.63
897.94	.91	.24	.50
81.63	6.90	4.59	63.79
1816.52	853.42	1247.85	1219.96

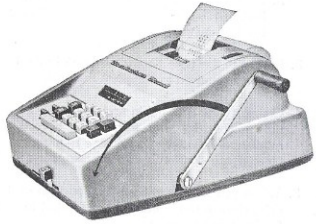
(13)	(14)	(15)	(16)
8.03	9.82	40.41	95.63
50.18	3.85	9.91	9.08
7.01	5.61	4.64	.39
785.33	17.59	729.79	496.52
839.68	698.67	117.61	663.36
2.03	5.47	10.91	65.19
61.81	.44	.09	1.54
6.55	742.91	5.30	.84
1.17	53.23	.12	.22
.93	8.18	4.12	5.85
.30	.92	16.71	39.42
7.11	2.79	3.22	8.72
1770.13	1554.18	942.83	1386.24

Answers

9	
10	
11	
12	
13	
14	
15	
16	



Strike the Total Key with Your Right Little Finger.



Pull the Operating Handle Toward You.

Correct Position at Machine

Name_____

(17)	(18)	(19)	(20)
8.46	3.22	1.89	2.27
3.43	8.66	9.14	.98
742.69	157.57	.29	4.58
986.24	6.33	6.23	953.73
97.21	37.99	869.23	9,634.28
7,679.48	575.93	8,938.45	2.06
.20	7.12	.05	.04
.80	.95	9.06	68.21
9.64	696.77	4.74	2.40
95.77	56.84	284.06	.15
.01	.51	4.92	4.75
.34	.06	7.20	502.77
9624.27	1587.95	10135.26	11176.22

(21)	(22)	(23)	(24)
.57	9.86	.62	5.69
.08	6.49	8.74	.37
3.82	.78	5,853.99	6.66
937.80	.27	4.69	.57
7,998.75	4.21	.25	.08
8.11	.93	.02	2.57
28.67	22.98	5.23	7.75
.08	.46	802.66	8,878.06
3,886.89	963.76	2.82	1,326.83
4.44	30.48	.42	673.68
.98	81.85	80.22	67.21
48.94	8656.58	2,517.04	.85
12919.43	9748.65	8276.70	10970.32

Answers

17	
18	
19	
20	
21	
22	
23	
24	

(25)	(26)	(27)	(28)
4.71	3.45	.10	5.51
.59	166.38	2.29	438.07
3.50	.74	.06	.08
68.48	6.75	181.68	4.52
6.20	4.82	5.23	88.75
.56	.67	65.22	6,947.81
.73	17.26	1.26	65.25
5,618.85	9.39	865.04	.62
394.35	797.79	80.38	879.65
.71	.57	2.95	.97
168.06	94.66	39.77	1.27
9.30	82.28	2.58	.11
6276.04	1184.76	1246.56	8432.61

Answers

25 _____
26 _____
27 _____
28 _____

Three-Minute Checkup Results

Number of problems completed	_____	Number of wrong answers	_____
Gross strokes (Multiply 40 by number of problems completed)	_____	Number of correct answers	_____
Minutes	3	Net strokes (Multiply 40 by number of correct answers)	_____
Gross strokes a minute (Divide gross strokes by 3)	_____	Net strokes a minute (Divide net strokes by 3)	_____

Three-Minute Checkup

Before proceeding with the Three-Minute Checkup, erase the answers for all problems of the drill.

To complete the Three-Minute Checkup:

a. Do as many problems in the Speed Drill as possible in three minutes.

b. Record each answer in the space provided at the right of the page.

c. At the end of the allotted time use the form at the bottom of this page to calculate the results of the checkup.

d. Record results on the Speed Drill Record, page 115.

Give the completed job to the instructor.

NOTE: Your next assignment in this book is Job No. 21. Before proceeding with Job No. 21, ask your instructor about Job No. 20, which is Test No. 2.

21

DIVISION
Remainder in Quotient
Decimals in Quotient
Decimals in Dividend and Divisor

Warm-Up Drill

Complete Warm-Up Drill D, page 59.

Remainder in Quotient

In Job No. 18 dividends were divisible evenly by the divisors, so there were no remainders in the answers. However, the dividend frequently is not evenly divisible by the divisor and a remainder will appear in the answer.

Standard Machines and Automatic Multipliers

In the reciprocal method of division, remainders do not appear in the answer. Complete these problems in the usual way.

Printing Calculators

Solve problems in the usual method. The calculators will automatically print the remainder as the last item on the tape.

JOB No. 21 DIVISION Remainder in Quotient Decimals in Quotient Decimals in Dividend and Divisor	Name _____ Period _____ Date _____	No. of Errors _____ Warm-Up Drill Strokes _____ Rating _____

Remainder in Quotient

(1) 158 ÷ 12 = 13.164614 (.083333)

(2) 4,381 ÷ 14 = 312.930452 (.071429)

(3) 14,648 ÷ 349 = 41.96652 (.002865)

(4) 363 ÷ 14 = 25.928727 (.071429)

(5) 9,475 ÷ 70 = 135.359851 (.014286)

Answers

1 _____
2 _____
3 _____
4 _____
5 _____

Printing Calculators

Olivetti, Underwood, and Underwood-Olivetti

	* <
	1 < <
	158 + <
Dividend	158 ◇ :
Divisor	12 + :
Quotient	13 * <
Remainder	2 * <

Underwood Sundstrand

		⌑
		1 ⌑
	Dividend	158
1		120
3	Divisor	12
Quotient		⌑
	Remainder	2 ⌑

Remington Rand

		*
		1 V
	Dividend	158
1	Divisor	12
3		12
Quotient		
	Remainder	2 *

Victor

		.00T
		.01N
÷	Dividend	1.58
÷	Divisor	.12
÷	Quotient	.13
÷	Remainder	.02T

Decimals in Quotient

(6) 158 ÷ 12 = 13.166614 (.083333)

(7) 8,525 ÷ 138 = 61.77215 (.007246)

(8) 647 ÷ 34 = 19.029564 (.029412)

(9) 2,127 ÷ 83 = 25.626096 (.012048)

(10) 438 ÷ 9 = 48.666618 (.111111)

Answers

6	
7	
8	
9	
10	

Printing Calculators

```
        * <
      1 < <
 158000 + <
 158000 ◇ :
     12 + :
  13166 * <
      8 * <
```

Olivetti, Underwood, and Underwood-Olivetti

```
                 *
               1 V
          158
1         12
3          12
1           12
6            12
6             12
               8 *
```

Remington Rand

```
                 ¤
               1 ¤
          158000
1         120000
3          12000
1           1200
6            120
6             12
                 ¤
               8 ¤
```

Underwood Sundstrand

```
                .00T

                .01N
÷         1,580.00
÷               .12
÷            131.66
÷               .08T
```

Victor

Decimals in Quotient

It is usually better to have a decimal remainder rather than a fractional remainder in division problems because decimals are easier to work with if further calculations of the quotient are necessary. Therefore, carry out the quotient to three decimal places and round to two places.

Standard Machines and Automatic Multipliers

In the reciprocal method of division, the answer already appears as a decimal. Complete these problems in the customary manner.

Printing Calculators

1. Enter the dividend [158] on the keyboard.
2. Strike the Positioning Key or 0 three times to provide for three decimals in the answer.
3. Strike the Plus Bar.
4. Divide in the usual manner.
5. Count off three decimal places in the quotient [13.166].
6. Round to two decimal places [13.17].

Decimals in Dividend and Divisor

Standard Machines and Automatic Multipliers

Complete these problems using the reciprocal method.

Disregard the decimal in the divisor [21.5 becomes 215] when looking in the reciprocal table for the reciprocal [.004651]. Adjust the decimal point in the reciprocal to provide for the decimal point in the divisor by adding or taking away zeros immediately to the right of the decimal point in the reciprocal. **Rule:** There are as many zeros to the right of the decimal point in the reciprocal as there are whole numbers in the divisor, **less one** [21.5 = two whole numbers, less one = one zero to the right of the decimal, .04651].

Multiply the dividend [63.412] by the reciprocal of the divisor [.04651]. Mark off decimal places in the product for the number of decimals in the multiplicand plus the number of decimals in the multiplier [three decimals in the multiplicand and five decimals in the multiplier means to mark off 8 decimals in the product, 2.94929212 = 2.95].

Printing Calculators

The number of decimal places in the quotient equals:

number of decimal places in dividend less number of decimal places in divisor.

There should always be three decimals in the quotient so it can be rounded to two accurate places. If the number of decimal places in the dividend less the number of decimal places in the divisor does not equal at least three, add 0's or strike the Positioning Key so there will be three decimals in the quotient [three decimals in the

 Name_____

Decimals in Dividend and Divisor

(11) 63.412 ÷ 21.5 = 2.95

(12) 4.5627 ÷ 2.4 = 2.901

(13) 70.96 ÷ 53.3 = 1.33

(14) 745.08 ÷ 47.3 = 15.75

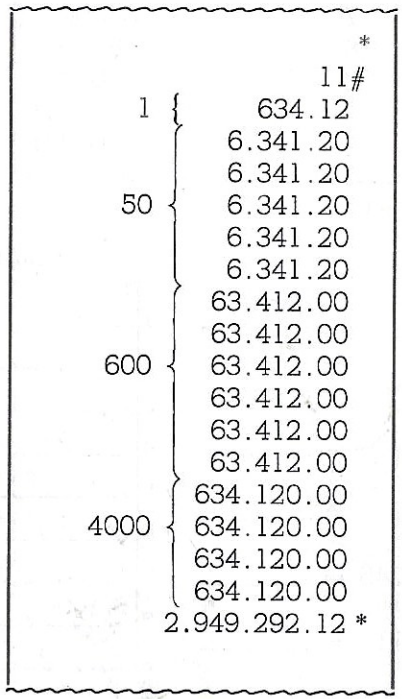
(15) 621.38 ÷ 2.24 = 277.38

Answers

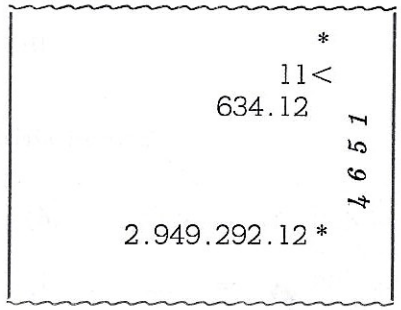
11	
12	
13	
14	
15	

Standard Machines and Automatic Multipliers

Divisor	Reciprocal	Whole Numbers in Divisor	Zeros to Right of Decimal in Reciprocal
215	= .004651	3	less one = 2
21.5	= .04651	2	less one = 1
2.15	= .4651	1	less one = 0



Standard Machine



Automatic Multiplier

JOB No. 21 (Cont'd.)

(16) 82.3 ÷ 8.43 = 9.76078 (.1186)

(17) 968.12 ÷ .439 = 2205.37738 (2.278)

(18) 311.9 ÷ 3.1 = 100.61894 (.32258)

(19) 8.453 ÷ 5.7 = 1.4826562 (.17544)

(20) 98.0 ÷ 7.64 = 12.8282 (.1309)

Answers

16	
17	
18	
19	
20	

Printing Calculators

	¤
	11 ¤
	634120
2	215000
9	21500
4	2150
9	215
	¤
	85 ¤

	¤
	16 ¤
	8230000
0	8430000
9	843000
7	84300
6	8430
2	843
	¤
	634 ¤

Underwood Sundstrand

Timed Drill

(1) 4,382 ÷ 463 = 9.46512 (.00216)

(2) 7,439 ÷ 65 = _____ (.015385)

(3) 1,635 ÷ .834 = .43 (1.199)

(4) 463 ÷ 93.6 = _____ (.01268)

(5) 68.31 ÷ 193 = _____ (.005181)

(6) 69.11 ÷ 50 = _____ (.02)

(7) 325.65 ÷ 5.76 = _____ (.1736)

(8) 33.26 ÷ 9.7 = _____ (.10309)

(9) 2.41 ÷ .245 = _____ (4.082)

(10) 172.98 ÷ 2.11 = _____ (4.739)

Timed Drill

1	
2	114.48621
3	1960.365
4	4.94484
5	.35391411
6	1.3822
7	56.53284
8	3.4287734
9	9.83762
10	819.75222

JOB No. 21 (Cont'd.)

dividend and one decimal in the divisor means to add one 0 or strike the Positioning Key once after the dividend to have three decimals in the quotient].

If the divisor has more decimal places than the dividend, 0's must be added to the right of the dividend so the total number of decimals in the dividend less the decimals in the divisor will equal three [82.30000 ÷ 8.43].

Timed Drill

Do Timed Drill Problems (1) to (10) in the usual manner.

22 CREDIT BALANCES

Warm-Up Drill

Complete Warm-Up Drill C, page 47.

If a larger number is subtracted from a smaller number, the result will be a credit balance.

```
  25 Minuend
 -78 Subtrahend
  53 Credit Balance
```

Some machines are equipped with a credit balance feature that will calculate the credit balance directly. There is usually no obvious way of identifying this feature by inspecting the machine, but you will discover it if your machine is so equipped when a problem with a credit balance is calculated.

To Complete Problems (1) to (16):

1. Add the minuend [25] into the machine using the touch method.
2. Subtract the subtrahend [78] using the touch method.
3. Take a total.
   a. **Machines with Credit Balance**
   The credit balance will print directly and will be identified with one of these symbols: CR, −, or C. It may be printed in red. [53 CR]
   b. **Machines Without Credit Balance**
   The answer is called a "complementary total" and will begin with a series of 9's [9999999947]. The answer is the complement* of the credit balance. To find the credit balance:

(Continued)

*The complement of a number is the difference between the number and the next higher power of 10, i.e., 1, 10, 100, 1,000, 10,000, etc. For example, the complement of 70 is 30 (100−70 =30) and the complement of 4 is 6 (10−4=6).

JOB No. 22 CREDIT BALANCES	Name _____ Period _____ Date _____	No. of Errors _____ Warm-Up Drill Strokes _____ Rating _____

```
      *
    1 #
   25
   78 −
   53 CR
```

Machine with Credit Balance

```
      *
    1 V
   25
   78 −

9999999947 *
9999999947 −

   53 *
```

Machine Without Credit Balance

(1)	(2)	(3)	(4)
.25	6.22	5.45	114.20
.78−	6.37−	8.70−	572.72−
.53 cr.	.15 cr.	3.25 cr.	458.52 cr.

(5)	(6)	(7)	(8)
286.29	806.92	138.94	734.07
531.08−	916.91−	274.18−	981.30−
244.79 cr.	109.99 cr.	135.24 cr.	247.23 cr.

Answers

1	
2	
3	
4	
5	
6	
7	
8	

JOB No. 22 (Cont'd.)

(9)	(10)	(11)	(12)
1.80	2.30	.43	7.15
8.54–	256.57	.38	118.40
6.71–	872.90–	50.31–	538.07–
7.91	156.22	1.62	65.62
9.12	56.32	.78–	284.25–
6.12–	7.49	3.03	703.52
7.76	26.37–	.37	919.67
4.68–	678.47–	8.29–	3.06–
6.26	95.04	27.69	87.27
9.28–	517.34	3.34	7,646.80–
6.47	62.86–	.09	803.08–
6.94–	8.17	7.68	3.72–
2.95 cr.	999.99 cr.	14.75 cr.	7,377.35 cr.

Answers

9	
10	
11	
12	
13	
14	
15	
16	

(13)	(14)	(15)	(16)
.54	1.20	9.48	2.62
2,382.25–	.54	.58	.37
688.42–	6.19–	.53	.94–
19.26	5.38	9.09–	7.89
9.00	.64	441.40–	802.84–
54.84–	467.21–	5.55	91.17
7.19	.22	3.17	.18
905.77	2.33	.06	1.96
5.03	8.11	4.08–	.16
.46	.21	.68	1.79–
213.44–	2.88–	.90	7.14
.22	.38	4.23–	.20
2,391.48 cr.	457.27 cr.	437.85 cr.	693.86 cr.

JOB No. 22 (Cont'd.)

(1) Enter the complementary total, including the 9's, on the keyboard [9999999947].

(2) Subtract once.

(3) Take a total [53].

(4) Record the answer followed by "CR" to indicate it is a credit balance [53CR].

On machines with credit balance features, the credit balance symbol will appear when you depress the total key to clear your machine for the next problem.

JOB No. 22 (Cont'd.)

To Complete Problems (17) and (18):

Accounts receivable ledger sheets are used to record transactions with customers. Accounts payable ledger sheets record transactions with creditors.

In an accounts receivable ledger sheet, sales to the customer are recorded in the Debit column. Cash paid and the value of merchandise returned by the customer are recorded in the Credit column. The difference between the two columns represents the balance that the customer owes.

Check the entries in the accounts receivable ledger sheets by adding each debit to the preceding balance and subtotaling to secure the new balance. Each Credit should be subtracted from the preceding balance and a subtotal taken to find the new balance.

If your answer does not correspond with an item in the balance column, check your work. If the balance in the ledger is wrong, cross out the amount and write in the correct balance.

Ordinarily an accounts receivable has a debit balance. If, on the other hand, an amount is owed the customer, his account will have a credit balance.

 Name_____

(17)

Name Covington, Paul M.
Address 2111 47 Street
Baltimore, Maryland

Date		Description	Post. Ref.	Debit	Credit	Balance
19-- Aug.	2	Balance				27889
	4		S8	16665		44554
	7		S10	56419		100973
	8		CR12		27889	73084
	10		CR 2		24173	48911
	12		S15	38913		87824
	15		CR14		42492	45332
	18		CR16		45332	—
	23		SR 3		17813	Cr 17813

(18)

Name Hinton, James C.
Address 3803 Elgin Avenue
Tacoma, Washington

Date		Description	Post. Ref.	Debit	Credit	Balance
19-- Aug.	2	Balance				13742
	3		S7	54723		68465
	5		CR10		13742	54723
	9		S13	37896		92619
	15		CR14		54723	37896
	17		S18	54317		92213
	20		CR19		37896	54317
	28		CR22		20000	34317

Timed Drill

(1)	(2)	(3)	(4)
8.56	7,636.92	7.71	715.13
14.64–	8,061.63–	9.81–	911.68–
6.08cr.	424.71cr.	2.10cr.	196.55cr.

(5)	(6)	(7)	(8)
481.86	4.80	979.56	9.51
682.85–	5.87–	1,291.94–	14.98–
200.99cr.	1.07cr.	312.38cr.	5.47cr.

(9)	(10)	(11)	(12)
8.15	.84	1.34	3.53
.55	2.54	.42	3.42
469.24–	95.53	24.47–	515.59
.25	9.65	5.43	.51–
5.32	651.50–	5.09	4.15
54.50	.34	356.52	74.15–
4.80	40.75–	6.04	.43
4.10	7.74	.49	576.35–
45.64–	.14	852.58–	4.31
5.40–	2.57–	.44	94.41–
.04	48.58	.05	.56
2.67	4.51	52.59–	4.39
439.90cr.	524.93cr.	563.72cr.	209.04cr.

Timed Drill

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	

Timed Drill

Do Timed Drill Problems (1) to (12) in the usual manner.

To Improve Your Work

Accuracy and speed will be increased by strict adherence to the following suggestions:

1. Hold the right arm as in free-arm writing with the wrist straight.
2. Curve the fingers of your right hand.
3. Read numbers in natural groups divided by commas and decimals.
4. Concentrate on reading the number to be entered in the machine.
5. Strike the keys separately for digits in each number.
6. Use a rhythmic, bounce touch.
7. Do not pause between strokes.
8. Keep your eyes on the written numbers. Do not look at the keyboard of the machine.

23 INTEREST

Warm-Up Drill

Complete Warm-Up Drill E, page 83.

Interest

Interest problems ordinarily involve the multiplication of three factors and then division of the final product. The following formula is generally used:

$$\frac{\text{Principal} \times \text{Rate} \times \text{Time}}{\text{Number of Days in Year}} = \text{Interest}$$

Principal is the amount of the loan (the amount upon which interest is to be calculated).

Rate is the percentage of interest to be charged. It is usually stated on an annual basis.

Time is the number of days for which interest is to be calculated.

Number of Days in Year is 365 (or 366) if the exact number of days is to be used. Frequently, however, 360 days are used to represent a year because of the ease in calculating. 360 days is called "bankers' time" and is based on 12 months of 30 days each.

To Complete Problems (1) to (6):

1. Multiply the principal by the rate [3,600 × .05 = 180].
2. Multiply the product of Step 1 by the number of days [180 × 30 = 5,400].
3. Divide the product of Step 2 by multiplying by the reciprocal of 360 [.002778×5,400=$15.00].

JOB No. 23 INTEREST	Name _____ Period _____ Date _____	No. of Errors _____ Warm-Up Drill Strokes _____ Rating _____

	Principal	Rate	Time	Interest
(1)	$3,600	5%	30 days =	15.00
(2)	1,350	6% 3645	45 days =	10.13
(3)	2,500 162.50	6 1/2% 9750	60 days =	27.09
(4)	2,481 74.43	3% 3572.64	48 days =	10.32
(5)	750 39.38	5 1/4% 3544.20	90 days =	9.85
(6)	120	7200		20.00

Answers

1	
2	
3	
4	
5	
6	

Find the interest and record your answer in the Answers column.

$2,000 00/XX Wichita, Kansas January 2 19 --

Sixty days after date I promise to pay to

the order of William P. Crawford

Two thousand 00/XX Dollars

Payable at First National Bank

Value received with interest at 6 %

No. 32 Due March 3, 19-- Wayne Kendall

Interest Divisor Table

	Principal	Rate	Time	Interest
(7)	$1,600	5%	60 days =	13.33
(8)	1,750	6 1/4%	90 days =	27.34
(9)	350	4 1/2%	80 days =	3.50
(10)	3,200	2 1/2%	45 days =	10.00
(11)	1,500	4%	75 days =	12.50

Answers	
7	
8	
9	
10	
11	
12	

(12)

$2,380 00/xx Chicago, Illinois May 6, 19--

Sixty days after date I promise to pay to

the order of Peter Knight

Two thousand three hundred eighty 00/xx Dollars

Payable at American National Bank

Value received with interest at 5 %

No. 21 Due July 5, 19-- Paul M. Kincaid

Interest Divisor Table

Time can be saved by using an interest divisor table because it is not necessary to multiply by the rate. The formula is:

$$\frac{\text{Principal} \times \text{Time}}{\text{Interest Divisor}} = \text{Interest}$$

To Complete Problems (7) to (14):

1. Multiply the principal by the time [1,600 × 60 = 96,000].
2. Find the interest divisor from the table on page 114 for the interest rate in the problem [7,200].
3. Divide the product of Step 1 by the interest divisor [96,000 ÷ 7,200] using the reciprocal method. To do this:
   a. Find the reciprocal of 7,200 from the table on page 113 [.0001389]. (Find the reciprocal of 720 and then add a zero to the right of the decimal to get the reciprocal for 7,200.)
   b. Multiply 96,000 by .0001389 to get the interest [$13.33].

JOB No. 23 (Cont'd.)

WARM-UP DRILL E

During the first five minutes of the period do Warm-Up Drill E below, following the usual procedure. Each problem contains 40 strokes.

(1)	(2)	(3)
761.64	196.25	2.82
3.42	68.69	414.56
85.86	9.24	9,734.60
45.65	39.73	.09
233.99	628.10	73.99
4.55	.59	159.19
5,372.94	64.44	146.97
.95	56.51	.35
9.70	7.54	118.12
878.50	9,782.48	63.70
7,397.20	10853.57	10714.39

(4)	(5)	(6)
4,182.99	27.59	.02
92.33	1.65	9.88
2.59	392.29	2,599.82
1.76	7.13	85.59
29.41	290.23	692.09
21.98	459.94	.51
.42	7.76	728.09
17.94	554.40	87.46
707.73	.08	19.57
682.54	829.57	1,927.50
5239.69	2570.64	6150.53

Name _____

36800 6000 .001667 61.35

(13)

$ 920 00/xx Minneapolis, Minn. Nov. 19 19--

Forty days after date 9 promise to pay to

the order of Ray Smalley

Nine hundred twenty 00/xx Dollars

Payable at Citizens State Bank

Value received with interest at 6 %

No. 17 Due Dec. 29, 19-- Charles E. Thompson

13400 8000 .001250 2.18

(14)

$ 580 00/xx San Francisco, Calif. Aug. 17 19--

Thirty days after date 1 promise to pay to

the order of Floyd J. Wells

Five hundred eighty 00/xx Dollars

Payable at City National Bank

Value received with interest at 4 1/2 %

No. 92 Due Sept. 16, 19-- Brooks B. Henson

Answers

13 [ ] 14 [ ]

,00 2778

JOB No. 23 (Cont'd.)

Timed Drill

	Principal	Rate	Time	Interest
	12.50	750		
(1)	$500	2 1/2%	60 days =	2.08
	53.40	2136		
(2)	890	6%	40 days =	5.93
	185.50	9275		
(3)	5,300	3 1/2%	50 days =	25.77
	45.50	3412.5		
(4)	1,400	3 1/4%	75 days =	9.48
	78	3570		
(5)	1,200	6 1/2%	45 days =	9.75

Timed Drill

1	
2	
3	
4	
5	
6	

44 3960 (6) 11,08

$ 800 00/100 Ogden, Utah March 24 19--

Ninety days after date I promise to pay to

the order of Claude P Graves

Eight hundred 00/100 Dollars

Payable at Ogden National Bank

Value received with interest at 5 1/2 %

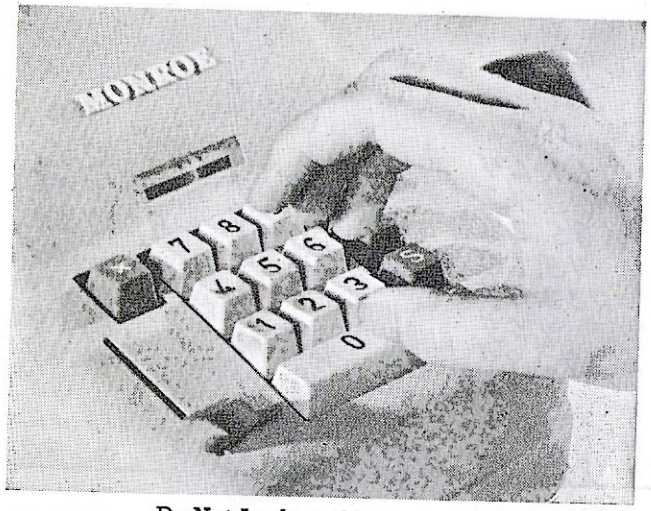
No. 62 Due June 22, 19-- Alton J. Dodge

JOB No. 23 (Cont'd.)

Timed Drill

Do Timed Drill Problems (1) to (6) in the usual manner.

Do not use the interest divisor tables.



Do Not Look at the Keyboard.
4, 5, and 6 Keys Are Your "Home Row."

24 PERCENTAGE OF INCREASE AND DECREASE

Warm-Up Drill

Complete Warm-Up Drill F, page 87.

Percentages of increase and decrease are used to compare business trends in two different periods of time by finding the percentage of change between two numbers. Use this formula:

$$\text{Older Number (Base)} \overline{\Big)\ \text{Amount of Increase or Decrease}}^{\text{Per Cent of Increase or Decrease}}$$

To Complete Problems (1) to (25):

1. Determine the difference between the older and the newer number by subtraction. [360 − 200 = 160].

2. Divide the difference by the older number (the base) [160 ÷ 200 = .80, or 160 × .005 = .80].

3. a. If the older number is smaller than the newer number, this is a per cent of increase and the answer should be preceded by a (+) sign [+80%].

   b. If the older number is larger than the newer number, this is a per cent of decrease and the answer should be preceded by a (−) sign.

JOB No. 24		No. of Errors
PERCENTAGE OF INCREASE AND DECREASE	Name	Warm-Up Drill Strokes
	Period Date	Rating

SALES

	Last Week	This Week		Amt. of Inc. or Dec.	% of Inc. or Dec.
(1)	$200	$360	=	160	80%
(2)	450	600	=	150	33⅓
(3)	320	450	=	130	40.625%
(4)	689	439	=	−250	−36.275
(5)	981	931	=	−50	−5.095

.003125
.001451
.001019

Answers

1	
2	
3	
4	
5	

Pencil and Paper

$360	Newer Number	.80 Inc. = +80%
−200	Older Number (Base)	200)160.00
$160	Amount of Increase	

```
        *
      1#
    3.60
    2.00−
    1.60 *
    1.60
    1.60
    1.60
    1.60
    1.60
    8.00 *
```

Standard Machine

```
        *
      1<
    3.60
    2.00−
    1.60 *
    1.60
    8.00 *
```

Automatic Multiplier

```
      * <
     1<<
   360+<
   200−<
   160 * <
160000+<
160000 ◇ :
   200+ :
   800 * <
      * <
```

```
        .00T

        .01N
       3.60
       2.00−
       1.60T

÷   1,600.00
÷       2.00
÷       8.00
÷        .00TC
```

Printing Calculators

JOB No. 24 (Cont'd.)

EXPENSE COMPARISON

Item	Previous Month	Present Month	Amt. of Inc. or Dec.	% of Inc. or Dec.
(6) Advertising	.001938 $516	$919	403	78.1014
(7) Bad Debts	.015152 66	86	20	30.304
(8) Delivery Exp.	.002558 391	595	204	52.1832
(9) Depreciation	.003436 291	295	4	1.3744
(10) Heat & Light	.011628 86	80	-6	-6.9768
(11) Insurance	.005952 168	172	4	2.3808
(12) Rent	.001458 685	650	-35	-5.103
(13) Salaries	.001015 985	1,200	215	21.8225
(14) Supplies	.003891 257	193	-64	-24.9024
(15) Taxes	.004202 238	256	18	7.5636

Answers

6
7
8
9
10
11
12
13
14
15

JOB No. 24 (Cont'd.)

Study the following examples to understand the relationship between amount and per cent of increase and decrease.

	Last Week	This Week	Amt. of Inc. or Dec.	% of Inc. or Dec.
(a)	$200	$360	+160	+ 80
(b)	200	400	+200	+100
(c)	200	300	+100	+ 50
(d)	200	200	——	——
(e)	200	100	−100	− 50
(f)	200	——	−200	−100
(g)	200	140	− 60	− 30

110.50
40.25
13.60
18.75
173.10

110.50
173.10
937.40

WARM-UP DRILL F

During the first five minutes of the period do Warm-Up Drill F below, following the usual procedure. Each problem contains 10 strokes.

(1)	(2)	(3)
758.47	756.41	526.94
544.67–	124.31–	513.53–
213.80	632.10	13.41
(4)	**(5)**	**(6)**
345.75	4,238.07	828.75
177.05–	96.76–	307.18–
168.70	4141.31	521.57
(7)	**(8)**	**(9)**
507.16	2,063.96	719.09
366.84–	26.96–	241.78–
140.32	2037.00	477.31

Name_____

SALES

Salesman	Previous Week	Present Week	Amt. of Inc. or Dec.	% of Inc. or Dec.
(16) Arnold, F.	$667	$775	108	16.1892
(17) Clifton, G.	940	352	-588	-62.5532
(18) Crawford, N.	928	751	-177	-19.0806
(19) Evans, E.	154	460	306	198.7164
(20) Foster, J.	715	853	138	19.3062
(21) Hodge, R.	465	712	247	53.1297
(22) Kerr, F.	547	877	330	60.324
(23) Phelps, E.	388	785	397	102.3069
(24) Sanders, B.	365	926	561	153.714
(25) Slaton, B.	400	551	151	37.75

Answers

16
17
18
19
20
21
22
23
24
25

Timed Drill

SALES

	Last Week	This Week	Amt. of Inc. or Dec.	% of Inc. or Dec.
(1)	$831	$1,285	454	54.6162
(2)	689	435	-254	-36.8554
(3)	867	775	-92	-10.6076
(4)	961	2,348	1387	144.3867
(5)	293	555	262	89.4206

NET PROFIT

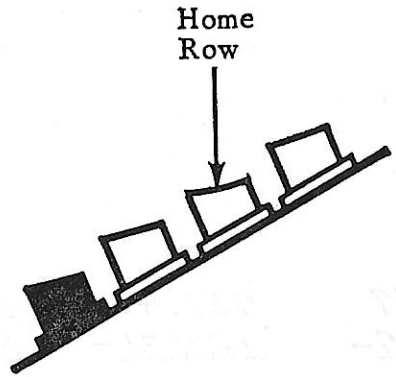
	Last Week	This Week	Amt. of Inc. or Dec.	% of Inc. or Dec.
(6)	$762	$580	-182	-23.8784
(7)	920	320	-600	-65.22
(8)	500	467	-33	6.6
(9)	261	417	156	59.7636
(10)	458	755	297	64.8351

Timed Drill

1
2
3
4
5
6
7
8
9
10

Timed Drill

Do Timed Drill Problems (1) to (10) in the usual manner.



The "Home Row" Keys (4, 5, and 6) Are Concave.

25 SPEED DRILL ADDITION

The Speed Drills in this book are designed to aid you to increase speed and accuracy in operating the ten-key listing machine.

This drill contains 28 problems of 50 strokes each, a total of 1,400 strokes. In completing this drill you should strive constantly to improve both speed and accuracy.

1. Complete each problem once, writing the answer in the space at the right of the page.

2. Complete the drill again, this time keeping a close check on the time in minutes and seconds.
   a. If the second answer is the same as the first, place a check mark (√) beside the first answer.
   b. If the second answer is not the same as the first, write the second answer alongside the first answer.

3. Record in the Time Record at the right the time that was required to complete the drill.

4. Complete the drill again and again during the time allotted by your instructor. Record the number of minutes and seconds required each time, trying constantly to increase your speed.

5. When you have spent the allotted time on the drill, draw a circle around your fastest time in the Time Record form.

JOB No. 25 SPEED DRILL ADDITION	Name _____ Period _____ Date _____	No. of Errors _____ Warm-Up Drill Strokes _____ Rating _____

1 Emphasized

(1)	(2)	(3)	(4)
1.51	.41	23.32	212.87
3.17	142.16	.26	2.72
11.19	15.19	21.72	.26
5,168.18	4,614.13	2.11	8,292.34
6.01	1.46	223.25	.32
15.21	119.01	326.24	259.62
1,251.91	81.91	27.92	28.12
2.14	12.31	29.32	222.53
3,718.14	1,268.01	32.62	2,151.12
17.51	.71	221.29	.24
1.16	51.17	276.12	278.27
916.13	132.19	209.82	202.56
1442.26	6438.66	1393.99	11650.97

2 Emphasized

3 Emphasized

(5)	(6)	(7)	(8)
5.38	6.32	4.46	47.57
38.73	3.43	440.34	894.42
63.63	73.35	4.64	4,355.59
393.15	6,321.03	1.04	4.15
93.53	328.63	4,542.51	748.57
3.34	323.33	24.85	49.48
34.36	3,732.33	4.02	58.44
93.88	53.31	4,448.46	4.65
13.93	31.53	44.88	6.53
233.83	37.30	43.41	458.55
333.32	5.31	4,521.65	94.13
319.03	3.93	4.47	44.50
1626.11	10719.80	14084.23	6766.58

4 Emphasized

Time Record		
No.	Time	
	Min.	Sec.
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Answers

1	
2	
3	
4	
5	
6	
7	
8	

5 Emphasized		6 Emphasized	
(9)	(10)	(11)	(12)
593.64	58.55	696.86	3,631.63
5,655.85	.57	2.96	64.67
51.52	14.75	6.46	6.26
53.85	58.75	367.56	67.67
9.95	845.62	68.26	6.06
51.45	96.65	76.69	2.76
5.56	535.14	667.66	6.62
5,435.50	5,565.56	6.67	6,066.48
5.75	528.50	676.18	6.90
9.57	5.55	460.36	616.65
1.15	54.55	63.68	61.62
5,614.57	58.59	68.96	6,761.61
17488.36	7822.78	3162.30	17298.73

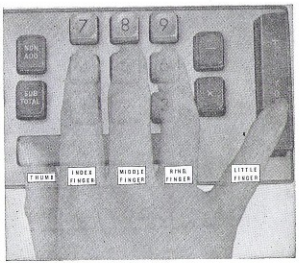
Answers

9	
10	
11	
12	
13	
14	
15	
16	

7 Emphasized		8 Emphasized	
(13)	(14)	(15)	(16)
717.85	6,773.57	83.80	8,838.63
8.47	73.57	8,848.38	85.87
7.57	7,937.75	8.08	838.89
1,974.78	87.37	8.32	9,288.93
1.75	7,671.57	8,581.82	814.68
.74	73.37	38.78	9.58
78.73	74.57	80.58	.83
7.88	.71	6.48	128.98
7,282.78	737.87	8.57	8.35
37.75	5.17	8.86	.82
872.87	7.78	868.18	8.84
7,878.27	7.07	8,886.18	2,868.53
17869.64	23450.37	29427.03	22892.93

Correct Position at Machine

JOB No. 25 (Cont'd.)



Use the Touch Method.
Do Not Look at the Keyboard.

JOB No. 25 (Cont'd.)

Name_____

9 Emphasized		0 Emphasized	
(17)	(18)	(19)	(20)
989.90	199.80	3,032.50	7.07
39.49	93.49	1.00	.90
993.96	99.23	80.80	53.60
9,692.95	1,494.97	53.10	364.60
96.97	1.98	98.60	36.30
.69	9.98	300.90	630.80
92.97	8.19	368.50	679.20
9.22	897.91	313.40	31.10
9.19	959.82	16.03	36.40
9.89	9.96	61.08	3,070.20
9,392.49	9.39	67.50	30.50
949.66	9,977.39	.20	63.07
22277.38	13732.11	4393.61	5003.7

Answers

17	
18	
19	
20	
21	
22	
23	
24	

0 Emphasized		5 Emphasized	
(21)	(22)	(23)	(24)
6.08	4.02	953.54	4.50
10.37	.30	49.51	.15
55.60	5.02	5.08	5,851.51
908.05	907.80	407.15	5.05
501.20	809.05	53.75	558.25
105.20	6,304.20	9,566.06	5,795.19
30.40	91.60	43.59	56.47
43.70	68.10	5.08	2.05
4.70	9,002.40	584.87	5.51
807.60	12.70	5.25	503.35
20.48	900.40	54.95	9,423.55
90.30	1.05	55.05	53.53
2583.68	18106.64	11783.88	22259.11

(25)	(26)	(27)	(28)
3.56	3,846.71	1,340.65	7,372.70
79.01	90.83	4.67	.52
34.07	73.83	20.62	46.73
89.09	1.22	6,930.70	3.26
727.13	9.02	887.93	649.17
600.45	6,754.08	2.15	56.90
89.02	7.89	9.20	5.68
721.43	822.71	3.58	19.18
911.83	44.04	394.03	956.03
73.29	551.30	5.60	5.77
75.46	2.35	45.47	8,207.00
8.05	85.70	805.73	258.17
3412.39	12289.68	10460.33	19581 11

Answers

25 _____
26 _____
27 _____
28 _____

Three-Minute Checkup Results

Number of problems completed	_____	Number of wrong answers	_____
Gross strokes (Multiply 50 by number of problems completed)	_____	Number of correct answers	_____
Minutes	3	Net strokes (Multiply 50 by number of correct answers)	_____
Gross strokes a minute (Divide gross strokes by 3)	_____	Net strokes a minute (Divide net strokes by 3)	_____

Three-Minute Checkup

Before proceeding with the Three-Minute Checkup, erase the answers for all problems of the drill.

To complete the Three-Minute Checkup:

a. Do as many problems in the Speed Drill as possible in three minutes.

b. Record each answer in the space provided at the right of the page.

c. At the end of the allotted time use the form at the bottom of this page to calculate the results of the checkup.

d. Record results on the Speed Drill Record, page 115.

Give the completed job to your instructor.

26 PRORATING

Warm-Up Drill

Complete Warm-Up Drill E, page 83.

Prorating

Prorating means to distribute a total amount proportionately. For example, the cost of rent for a department store may be distributed among the departments on the basis of the number of square feet that each department occupies. The square feet occupied would be the basic factor.

To Prorate in Problems (1) to (12):

1. Find the total of the basic factor [3,200].
2. Divide the amount to be prorated by the basic factor to find the prorating factor. Use the reciprocal method, as follows: 4,800 ÷ 3,200 = 4,800 × .0003125 (reciprocal of 3,200) = $1.50 (Rent per square foot)].
3. Multiply the share of each unit by the prorating factor [800 × 1.50, 600 × 1.50, etc.]
4. The total of the amounts prorated to each of the units should be the same as the amount to be prorated.
5. Since the prorated amounts have been rounded, they seldom total exactly the amount to be prorated. If the individual amounts do not total the amount to be prorated, "force" the total by increasing or decreasing the largest amount to make the sum of the prorated amounts equal the total to be prorated.

JOB No. 26 PRORATING	Name ______ Period ______ Date ______	No. of Errors ______ Warm-Up Drill Strokes ______ Rating ______

	Department	Square Feet Occupied	Amount Charged Each Dept.
(1)	Grocery	800	$ 1200
(2)	Produce	600	900
(3)	Bakery	400	600
(4)	Drugs	500	750
(5)	Meat	900	1350
	Totals	3,200	$4,800

Answers

1	
2	
3	
4	
5	
6	
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12	

Distribute profits of $3,600 to each person on the basis of investment.

	Person	Investment	Profit
(6)	A	$ 3,500	146.034
(7)	B	21,800	909.5832
(8)	C	6,500	271.206
(9)	D	4,100	171.0684
(10)	E	7,700	321.2748
(11)	F	13,700	571.6188
(12)	G	29,000	1209.22
	Totals	$ 86300	3600

.0417240

1209.86
.78
9.22

3600.7812

.0000159

JOB No. 26 (Cont'd.)

	Department	Volume of Business	Percentage	Share of Rent
(13)	A	$3,200	20%	240
(14)	B	4,800	30%	360
(15)	C	3,000	18.75%	225
(16)	D	3,600	22.50	270
(17)	E	1,400	8.75	105
Totals		16000	100%	$1,200

Answers

13	
14	
15	
16	
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19	
20	
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22	
23	

Distribute overhead of $2,800 to each department on the basis of sales.

	Department	Sales	Percentage	Amount Charged Each Department
(18)	A	$9,120	25.12%	703.36
(19)	B	8,300	22.87	640.36
(20)	C	6,200	17.08	478.24
(21)	D	8,600	23.69	663.32
(22)	E	2,780	7.66	214.48
(23)	F	1,300	3.58	100.24
		$36300	100 %	$2,800

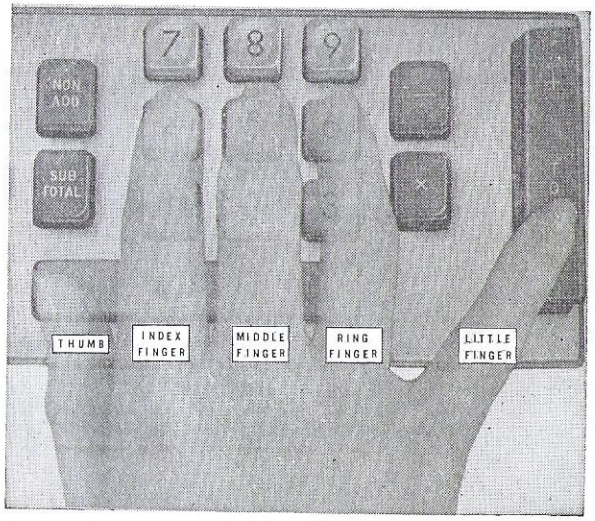
10000 2755

JOB No. 26 (Cont'd.)

To Complete Problems (13) to (35):

In some prorating problems it is desirable to find the percentage that each unit is of the total.

1. Find the total of the basic factor [16,000].
2. Find the reciprocal for the basic factor [.0000625].
3. Multiply the reciprocal for the basic factor by each of the units and record answers as percentages [20%, 30%, etc.].
4. The percentages should total 100%. Since the per cents have been rounded, they seldom total exactly 100. If the individual per cents do not total 100, "force" the total to read 100 by increasing or decreasing the largest per cent to bring the sum of the per cents to 100. Changing the largest per cent is the most commonly used method of forcing per cents and the one that most businessmen consider standard practice.
5. Multiply the total to be prorated by the percentage for each unit to find the prorated amount [1,200 × .20 = 240, etc.].



Strike 1, 4, 7 with the Index Finger.
Strike 2, 5, 8 with the Middle Finger.
Strike 3, 6, 9 with the Ring Finger.

Name_____

Distribute overhead of $26,500 to each department on the basis of volume of business.

	Department	Volume of Business	Percentage	Share of Overhead
(24)	A	$7,450	13.07	3463.55
(25)	B	4,800	8.42	2231.30
(26)	C	2,400	4.21	1115.65
(27)	D	7,820	13.74	3641.10
(28)	E	2,200	3.86	1022.90
(29)	F	6,850	12.01	3182.65
(30)	G	5,800	10.17	2695.05
(31)	H	1,000	1.75	463.75
(32)	I	1,830	3.21	850.65
(33)	J	5,340	9.37	2483.05
(34)	K	7,160	12.56	3328.40
(35)	L	4,350	7.63	2021.95
		$57000	100 %	$26,500

.00001754

Answers

24	
25	
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31	
32	
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JOB No. 26 (Cont'd.)

Timed Drill

Distribute profits of $8,200 to each person on the basis of investment.

Person	Investment	Profit
(1) Craig, Calvin C.	$28,000	2645.52
(2) Evans, Roger S.	17,000	1605.89
(3) Hensley, Kenneth	8,900	840.73
(4) Kent, John T.	2,200	207.82
(5) Newsom, Sherman L.	4,700	443.98
(6) Smith, Mark P.	26,000	2456.06
	$86800	$8,200

10000 1152

Timed Drill

1	
2	
3	
4	
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7	
8	
9	
10	
11	

.094464

8899
8280
8199.47
153

Distribute expenses of $6,200 on the basis of square feet occupied.

Department	Square Feet Occupied	Percentage	Expenses
(7) Home Furnishings	1,500	28.04	1738.48
(8) Clothing	1,000	18.69	1158.78
(9) Hardware	900	16.82	1042.84
(10) Automotive	1,200	22.43	1390.66
(11) Appliances	750	14.02	869.24
	$5350	100 %	$6,200

10001869

JOB No. 26 (Cont'd.)

Timed Drill

Do Timed Drill Problems (1) to (11) in the usual manner.

2644.99
.153
6245 52

27 PAYROLL

Warm-Up Drill

Complete Warm-Up Drill F, page 87.

Payroll

When salaries are paid on a monthly basis, a table showing the decimal equivalents for days of the month is commonly used.

To Complete Problems (1) to (5):

1. To find the decimal equivalent of days for the month, on the payroll table at the right locate the column for the number of days used as the monthly basis [24-day month]. Look down this column to the decimal that intersects with the number of days worked in the "Days" column [21].
2. Multiply the decimal equivalent for days of the month [.875] by the monthly salary rate [$520]. The answer will be the employee's salary [$455].

Fractions of Days

To Complete Problems (6) to (10):

1. Find the decimal equivalent for days of the month [.81481].
2. Find the decimal equivalent for fractions of days at the bottom of the chart [.01852].
3. Add the answer for Step 1 to the answer for Step 2 [.83333].
4. Multiply the decimal equivalent for days of the month [.83333] by the monthly salary rate [$460]. The answer will be the employee's salary [$383.33].

JOB No. 27 PAYROLL	Name _____	No. of Errors _____
	Period _____ Date _____	Warm-Up Drill Strokes _____
		Rating _____

	Days Worked	Salary Rate	Monthly Basis
(1)	21	$520	24-day month = 455
(2)	17	620	25-day month = 421.60
(3)	22	470	27-day month = 382.96
(4)	28	480	30-day month = 448.00
(5)	26	390	29-day month = 349.65

Fractions of Days

	Days Worked	Salary Rate	Monthly Basis
(6)	22 1/2	$460	27-day month = 383.33
(7)	20 1/4	650	25-day month = 548.16
(8)	21 1/2	530	26-day month = 438.27
(9)	26 3/4	600	28-day month = 573.22
(10)	27 1/2	610	28-day month = 599.11

Answers

1	
2	
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PAYROLL TABLE

Decimal Equivalents of Days

DAYS	24-Day Month	25-Day Month	26-Day Month	27-Day Month	DAYS	28-Day Month	29-Day Month	30-Day Month	31-Day Month	DAYS
1	.04167	.04	.03846	.03704	1	.03571	.03448	.03333	.03226	1
2	.08333	.08	.07692	.07407	2	.07143	.06897	.06667	.06452	2
17	.70833	.68	.65385	.62963	17	.60714	.58621	.56667	.54839	17
18	.75	.72	.69231	.66667	18	.64286	.62069	.6	.58065	18
19	.79167	.76	.73077	.7037	19	.67857	.65517	.63333	.6129	19
20	.83333	.8	.76923	.74074	20	.71429	.68966	.66667	.64516	20
21	.875	.84	.80769	.77778	21	.75	.72414	.7	.67742	21
22	.91667	.88	.84615	.81481	22	.78571	.75862	.73333	.70968	22
23	.95833	.92	.88462	.85185	23	.82143	.7931	.76667	.74194	23
24		.96	.92308	.88889	24	.85714	.82759	.8	.77419	24
25			.96154	.92593	25	.89286	.86207	.83333	.80645	25
26				.96296	26	.92857	.89655	.86667	.83871	26
					27	.96429	.93103	.9	.87097	27
					28		.96552	.93333	.90323	28
					29			.96667	.93548	29
					30				.96774	30

FRACTIONS OF DAYS

1/4	.01042	.01	.00962	.00926	1/4	.00893	.00862	.00833	.00806	1/4
1/2	.02083	.02	.01923	.01852	1/2	.01786	.01724	.01667	.01613	1/2
3/4	.03125	.03	.02885	.02778	3/4	.02679	.02586	.025	.02419	3/4

.83333
.01
.84133

.80769
.01923
.82692

.92857
.02679
.95536

.96429
.01786
.98215

WEEKLY PAYROLL

From October 1 19-- To October 7 19--

Employee Number	Number of Exemptions	Weekly Hours	Hourly Rate	Gross Pay	Deductions					Net Earnings
					Income Tax	FICA	Group Insurance	Savings Bonds	Total	
1	2	38	2.16	82.08	10.30	2.98	1.60	6.25	21.13	60.95
2	1	36	2.85	102.60	16.10	3.72			19.82	—
3	3	39	3.90	152.10	21.00	5.51			26.51	—
4	2	35	4.00	140	21.00	5.08		6.25	32.33	—
5	4	40	3.75	150	14.70	5.44	2.20		22.34	—
6	5	39	2.88	112.32	7.70	4.07	2.60		15.37	
7	4	30	2.95	88.50	6.80	3.21	2.20		12.21	
8	1	20	3.90	78	11.90	2.83		6.25	20.98	
9	1	39	3.90	152.10	25.60	5.51			31.11	
10	1	36	2.16	77.76	11.60	2.82			14.42	
11	2	25	2.88	72	5	2.61	1.60	6.25	15.96	
12	3	39	3.75	146.25	15.40	5.30			20.90	
13	4	35	4.00	140	16.10	5.08			21.18	
14	2	36	2.95	106.20	14.70	3.85	1.60		20.15	
15	3	34	2.85	96.90	10.50	3.51			14.01	
TOTAL				(25) 2	(26) 1140	(27) 61.52	(28) 11.80	(29) 25.00	(30)	(31)

1696.81 X 319.72

Answers: 1377 09

Answers

11	82.78
12	125.59
13	107.67
14	123.66
15	96.95
16	76.29
17	57.02
18	120.99
19	63.34
20	53.01
21	121.35
22	118.52
23	86.05
24	82.89
	1377.09

To Complete Problems (11) to (31):

1. Enter Employee Number with Non-Add Key.
2. Multiply Weekly Hours [38] by Hourly Rate [2.16] and take a subtotal to find Gross Pay [82.08].
3. Use the table on page 99 to determine Income Tax based on Gross Pay and number of exemptions [2]. Record Income Tax [10.30] in proper column.
4. Subtract Income Tax.
5. FICA is the abbreviation for Federal Insurance Contributions Act. Employers and employees each contribute equal percentages of the employees' Gross Pay, based on the following table that shows the tax rates and scheduled increases:

   1963–65.....3 5/8%
   1966–67.....4 1/8%
   1968.....4 5/8%

   On another calculating machine, or with pencil and paper, multiply Gross Pay [82.08] by the current FICA rate [3 5/8% for 1963] and record amount in the FICA column [2.98].
6. Subtract FICA.
7. Subtract Group Insurance [1.60].
8. Subtract Savings Bonds [6.25].
9. Subtotal to get Net Pay [60.95].
10. Subtract Gross Pay [82.08].
11. Total to get Total Deductions [21.13]. This total will appear as a credit balance on the tape, but disregard the credit symbol when writing your answer.
12. Add each column of figures beginning with Gross Pay and record totals.
13. The sum of the totals for the last two columns should equal the total of the Gross Pay column.

If the payroll period with respect to an employee is **Weekly:**

And the wages are —		And the number of withholding exemptions claimed is —					
At least	But less than	0	1	2	3	4	5
		The amount of income tax to be withheld shall be—					
60	62	11.00	8.70	6.40	4.10	1.70	0
62	64	11.30	9.00	6.70	4.40	2.10	0
64	66	11.70	9.40	7.10	4.80	2.50	.20
66	68	12.10	9.80	7.40	5.10	2.80	.50
68	70	12.40	10.10	7.80	5.50	3.20	.90
70	72	12.80	10.50	8.20	5.90	3.50	1.20
72	74	13.10	10.80	8.50	6.20	3.90	1.60
74	76	13.50	11.20	8.90	6.60	4.30	2.00
76	78	13.90	11.60	9.20	6.90	4.60	2.30
78	80	14.20	11.90	9.60	7.30	5.00	2.70
80	82	14.60	12.30	10.00	7.70	5.30	3.00
82	84	14.90	12.60	10.30	8.00	5.70	3.40
84	86	15.30	13.00	10.70	8.40	6.10	3.80
86	88	15.70	13.40	11.00	8.70	6.40	4.10
88	90	16.00	13.70	11.40	9.10	6.80	4.50
90	92	16.40	14.10	11.80	9.50	7.10	4.80
92	94	16.70	14.40	12.10	9.80	7.50	5.20
94	96	17.10	14.80	12.50	10.20	7.90	5.60
96	98	17.50	15.20	12.80	10.50	8.20	5.90
98	100	17.80	15.50	13.20	10.90	8.60	6.30
100	105	18.50	16.10	13.80	11.50	9.20	6.90
105	110	19.40	17.00	14.70	12.40	10.10	7.80
110	115	20.30	17.90	15.60	13.30	11.00	8.70
115	120	21.20	18.80	16.50	14.20	11.90	9.60
120	125	22.10	19.70	17.40	15.10	12.80	10.50
125	130	23.00	20.60	18.30	16.00	13.70	11.40
130	135	23.90	21.50	19.20	16.90	14.60	12.30
135	140	24.80	22.40	20.10	17.80	15.50	13.20
140	145	25.70	23.30	21.00	18.70	16.40	14.10
145	150	26.60	24.20	21.90	19.60	17.30	15.00
150	160	27.90	25.60	23.30	21.00	18.70	16.40
160	170	29.70	27.40	25.10	22.80	20.50	18.20
170	180	31.50	29.20	26.90	24.60	22.30	20.00
180	190	33.30	31.00	28.70	26.40	24.10	21.80
190	200	35.10	32.80	30.50	28.20	25.90	23.60
		18 percent of the excess over $200 plus —					
$200 and over		36.00	33.70	31.40	29.10	26.80	24.50

.03625

Name _____

To Complete Problems (32) to (50):

1. Complete the Employee's Earnings Record using the procedure for calculating the Weekly Payroll.

2. Add all columns vertically and record answers as Quarterly Totals.

3. Quarterly Totals for Total Deductions plus Net Earnings should equal Gross Pay.

EMPLOYEE'S EARNINGS RECORD FOR QUARTER ENDING December 31, 19--

Name Abbott, James R. Social Security No. 119-16-4893 Employee Number 1

Address 3114 Grinnell Avenue, Flagstaff, Arizona Tel. No. 236-4189

Male X Female — Married X Single — Number of Exemptions 2 Selective Service Class None

Date Employed March 24, 19-- Job Machinist Full time X Part time —

Period Ending	Weekly Hours	Hourly Rate	Gross Pay	Deductions					Net Earnings
				Income Tax	FICA	Group Insurance	Savings Bonds	Total	
Oct. 7	38	2.16	82.08	10.30	2.98	1.60	6.25	21.13	60.95
14	37	2.16	79.92	9.60	2.90			12.50	67.42
21	32	2.16	69.12	7.80	2.51			10.31	58.81
28	40	2.16	86.40	11.00	3.13			14.13	72.27
Nov. 4	40	2.85	114.00	15.60	4.13	1.60	6.25	27.58	86.42
11	40	2.85	114.00	15.60	4.13			19.73	94.27
18	32	2.85	91.20	11.80	3.31			15.11	76.09
25	34	2.85	96.90	12.80	3.51			16.31	80.59
Dec. 2	36	2.95	106.20	14.70	3.86	1.60	6.25	26.40	79.80
9	36	2.95	106.20	14.70	3.85			18.55	87.65
16	40	2.95	118	16.50	4.28			20.78	97.22
23	40	2.95	118	16.50	4.28			20.78	97.22
30	40	2.95	118	16.50	4.28			20.78	97.22
Quarterly Totals			(44)	(45) 1734.0	(46) 447.14	(47) 4.80	(48) 18.75	(49) 2409	(50) 1055.9

1300.02

Answers

Answers

32	
33	
34	
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37	
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41	
42	
43	

9.3

Timed Drill

WEEKLY PAYROLL

From October 16 19-- To October 21 19--

Employee Number	Number of Exemptions	Weekly Hours	Hourly Rate	Gross Pay	Deductions					Net Earnings
					Income Tax	FICA	Group Insurance	Savings Bonds	Total	
1	4	38	2.80	106.40	10.10	3.86			13.96	
2	1	37	2.80	103.60	16.10	3.76			19.86	
3	5	40	2.70	108.00	7.80	3.92			11.72	
4	3	34	3.50	119.00	14.20	4.31			18.51	
5	3	36	3.50	126	16.00	4.57			20.57	
6	2	39	3.80	148.20	21.90	5.37			27.27	
7	4	40	3.50	140	16.40	5.08			21.48	
8	4	40	4.20	168	20.50	6.09			26.59	
9	2	40	4.00	160	25.10	5.80			30.90	
10	1	31	3.80	117.80	18.80	4.27			23.07	
11	1	34	3.80	129.20	20.60	4.68			25.28	
12	3	35	3.50	122.50	15.10	4.44			19.54	
13	4	36	2.70	97.20	8.20	3.52			11.72	
14	3	37	2.80	103.60	11.50	3.76			15.26	
15	2	39	4.00	156	23.50	5.66			29.16	
	TOTAL			(16) 2	(17) 5.60	(18)	(19)	(20)	(21)	(22)

1905.50 69.09

Answers							

.03625

Answers

1	92.44
2	83.74
3	96.28
4	100.49
5	105.43
6	120.93
7	118.52
8	141.41
9	129.10
10	94.73
11	103.92
12	102.96
13	85.48
14	88.34
15	127.04

JOB No. 27 (Cont'd.)

Timed Drill

Do Timed Drill Problems (1) to (22) in the usual manner.

To Improve Your Work

Accuracy and speed will be increased by strict adherence to the following suggestions:

1. Estimate the answer mentally.
2. Record answers accurate to two decimal places.
3. Record answers rapidly.
   a. Look at the answer on the tape and keep it in mind.
   b. Write the answer in the proper places.

(100)

28 RECONCILIATION OF BANK STATEMENTS

Warm-Up Drill

Complete Warm-Up Drill D, page 83.

Reconciliation of Bank Statements

To Complete Problems (1) to (5):

Proving the accuracy of the balance in the checkbook and the balance on the bank statement is called "reconciling the bank statement."

1. To find the Adjusted Checkbook Balance:
   a. Accumulate the Additions, take a subtotal, and record the amount [936.00] below the Checkbook Balance.
   b. Add the Checkbook Balance to the Additions and take a total [1,398.80]. Record the total.
   c. Subtract the Deductions and take a subtotal. The answer will be a credit balance [27.25 Cr.]. Record the answer to the right of the last deduction.
   d. Add the total found in Step 1b and take a total. Record the answer as the Adjusted Checkbook Balance [1,371.55].
2. To find the Adjusted Bank Balance:
   a. Add the Bank Balance to the Additions, take a total, and record the answer [1,546.45].
   b. Subtract the Deductions and take a subtotal. The answer will be a credit balance [174.90 Cr.]. Record it to the right of the last deduction.
   c. Add the total found in Step 2a and take a total [1,371.55]. Record the answer as the Adjusted Bank Balance.

The Adjusted Checkbook Balance and the Adjusted Bank Balance should be the same.

JOB No. 28		No. of Errors
RECONCILIATION OF BANK STATEMENTS	Name	Warm-Up Drill Strokes
	Period Date	Rating

(1)

Reconciliation of Bank Account

September 30, 19—

Checkbook Balance		$462.80	**Bank Balance**		$955.45
Additions:			Additions:		
Note Collected	$500.00		Deposit 9/29	591.00	
Deposit Omitted	436.00	936.00			$1546.45
		$1398.80	Deductions:		
Deductions:			Outstanding Checks:		
Service Charge	4.00		#520	$37.80	
Error Check #426	19.00		523	96.10	
Collection Charge	4.25	$27.25	524	41.00	$174.90
Adjusted Checkbook Balance		$1371.55	Adjusted Bank Balance		$1371.55

(2)

Reconciliation of Bank Account

October 31, 19—

Checkbook Balance		$458.41	**Bank Balance**		$613.68
Additions:			Additions:		
Error Check #805	$10.00		Deposit 10/30	400.00	
Note Collected	330.00				$1013.68
Deposit Omitted	114.34	454.34	Deductions:		
		$912.75	Outstanding checks:		
Deductions:			#830	$40.15	
Service Charge	2.75		833	66.63	$106.78
Error Check #790	.10				
Collection Charge	3.00	$5.85			
Adjusted Checkbook Balance		$906.90	Adjusted Bank Balance		$906.90

(3)

Reconciliation of Bank Account

May 31, 19--

Checkbook Balance		$5,541.82	**Bank Balance**		$7,558.37
Additions:			Additions:		
Error Check #280	$100.00				
Note Collected	940.00	1040.00			
		$6581.82			
Deductions:			Deductions:		
Service Charge	8.30		Outstanding Checks		
Error Check #250	9.00		#302	$231.85	
Counter Check	94.91		#340	840.00	
Collection Charge	3.00	$115.21	#342	19.91	$1091.76
Adjusted Checkbook Balance		$6466.61	Adjusted Bank Balance		$6466.61

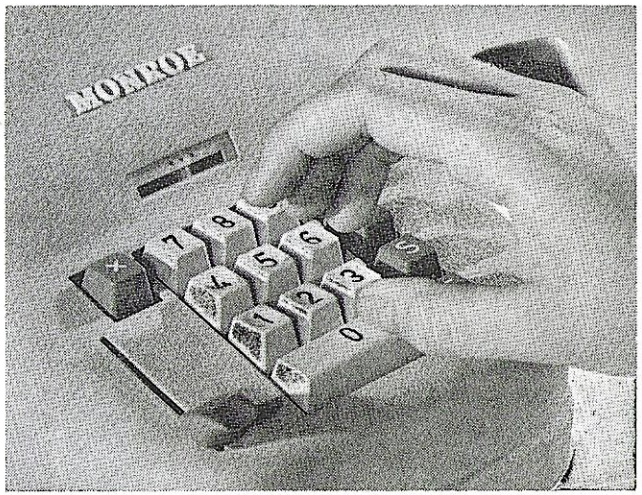
(4)

Reconciliation of Bank Account

January 31, 19--

Checkbook Balance		$2,372.20	**Bank Balance**		$3,119.55
Additions:			Additions:		
Error Check #860		100.00	Deposit January 30		282.00
		$2472.20			$3401.55
Deductions:			Deductions:		
Service Charge	$1.76		Outstanding Checks		
Error Check #872	.20		#899	$614.80	
Counter Check	3.68	$ 5.64	#902	20.00	
			#903	300.19	$ 934.99
Adjusted Checkbook Balance		$2466.56	Adjusted Bank Balance		$2466.56

Correct Position at Machine



Do Not Look at the Keyboard.
4, 5, and 6 Keys Are Your "Home Row."

 Name_____

(5)

Reconciliation of Bank Account
July 31, 19—

Checkbook Balance		$9,641.38
Additions:		
Error Check #2,341..	$ 20.00	
Note Collected.....	500.00	
Deposit Omitted.....	237.62	$ 757.62
		$10 399.00
Deductions:		
Service Charge.....	$7.25	
Error Check #2,302..	.99	
Error Check #2,390..	10.00	
Counter Check.....	67.42	
Collection Charge...	3.25	$ 88.91
Adjusted Checkbook Balance....		$10 310.09

Bank Balance		$10,100.69
Additions:		
Deposit 7/29.....		2,372.64
		$12 473.33
Deductions:		
Outstanding Checks		
#2,403.....	$70.70	
2,424.....	137.90	
2,432.....	32.37	
2,460.....	290.90	
2,461.....	415.80	
2,462.....	84.93	
2,465.....	319.98	
2,466.....	476.31	
2,467.....	334.35	$ 2163.24
Adjusted Bank Balance.....		$10 310.09

JOB No. 28 (Cont'd.)

Timed Drill

(1)

Reconciliation of Bank Account

March 31, 19—

Checkbook Balance		$978.95	**Bank Balance**		$934.88
Additions:			Additions:		
Error Check #586		14.00	Deposit 3/28		420.00
		$992.95			$1354.88
Deductions:			Deductions:		
Service Charge	$3.64		Outstanding checks:		
Counter Check	57.66	$ 61.30	#397	284.73	
			402	12.00	
			405	58.90	
			406	24.60	
			407	43.00	$423.23
Adjusted Checkbook Balance		$931.65	Adjusted Bank Balance		$931.65

(2)

Reconciliation of Bank Account

June 30, 19—

Checkbook Balance		$3,666.14	**Bank Balance**		$3,420.70
Additions:			Additions:		
Error Check #329	$30.30		Deposit 6/30		707.14
Error Check #400	9.00				
Deposit Omitted	142.00	$181.30			$4127.84
		$3847.44			
Deductions:			Deductions:		
Service Charge		1.75	Outstanding Checks		
			#409	$ 8.62	
			#420	89.53	
			#421	184.00	$282.15
Adjusted Checkbook Balance		$3845.69	Adjusted Bank Balance		$3845.69

JOB No. 28 (Cont'd.)

Timed Drill

Do Timed Drill Problems (1) and (2) in the usual manner.

29 SPEED DRILL ADDITION

The Speed Drills in this book are designed to aid you to increase speed and accuracy in operating the ten-key listing machine.

This drill contains 16 problems of 120 strokes each, a total of 1,920 strokes. In completing this drill you should strive constantly to improve both speed and accuracy.

1. Complete each problem once, writing the answer in the space at the right of the page.

2. Complete the drill again, this time keeping a close check on the time in minutes and seconds.
   a. If the second answer is the same as the first, place a check mark (√) beside the first answer.
   b. If the second answer is not the same as the first, write the second answer alongside the first answer.

3. Record in the Time Record at the right the time that was required to complete the drill.

4. Complete the drill again and again during the time allotted by your instructor. Record the number of minutes and seconds required each time, trying constantly to increase your speed.

5. When you have spent the allotted time on the drill, draw a circle around your fastest time in the Time Record form.

JOB No. 29 SPEED DRILL ADDITION	Name _____ Period _____ Date _____	No. of Errors _____ Rating _____

(1)	(2)	(3)	(4)
4,023.54	.57	44.45	740.22
48.67	48.64	679.97	61.36
.84	33.45	9,807.05	51.47
89.54	1,205.42	908.54	1,114.27
751.70	8,127.46	42.24	1.40
49.42	74.89	2,402.64	19.57
3.49	2.90	.36	6,943.93
265.47	777.03	17.81	409.66
1.30	30.01	27.61	192.49
3,002.16	1.92	5.91	93.59
18.13	.68	8,367.88	25.88
9.07	4.61	6.06	75.06
12.81	921.05	.74	504.03
189.79	427.68	.15	810.05
54.54	71.28	123.92	3.28
.23	525.97	97.52	88.25
5,608.39	53.61	70.96	8,487.41
5.57	805.38	5.83	63.92
256.77	38.84	.60	650.58
2,589.89	9.59	982.11	89.32
3.88	.09	21.85	106.77
1.22	651.14	7,360.17	.79
380.73	.38	50.46	.03
31.16	16.07	.18	10.92
78.67	97.27	35.66	52.94
1.21	6.41	88.68	8.78
.73	6,594.37	7,004.06	4.00
65.90	6.03	.64	42.75
1.96	8,823.20	213.95	3.56
400.39	909.40	23.37	.04
17943.17	30265.34	38391.35	20656.32

Time Record		
No.	Time	
	Min.	Sec.
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Answers

1	
2	
3	
4	

(105)

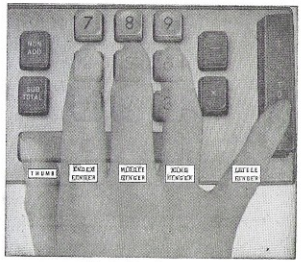
(5)	(6)	(7)	(8)
2.05	20.63	11.23	.97
38.07	843.41	.47	55.76
691.31	60.00	8,436.20	7.46
7,416.30	32.11	31.45	5.79
5.50	5.20	10.75	1,822.39
65.29	6,743.11	6.10	1,163.46
734.51	3.56	21.00	90.29
3,696.20	757.57	50.76	.99
1,907.12	19.66	17.77	49.80
35.14	.78	9,565.45	3.15
.49	53.65	3.52	3.03
82.32	36.35	7,633.66	356.03
8,662.77	7,449.55	99.58	.85
4.74	78.88	4.28	5,076.94
37.47	44.62	.60	22.52
48.08	.52	8,605.65	14.99
49.37	72.96	48.43	922.07
3.88	3,685.87	17.28	1,307.74
20.18	.90	5.82	80.18
5,216.52	21.88	484.26	77.10
.57	822.05	2,475.86	.01
290.62	3.74	733.28	479.53
3,147.45	43.39	1.61	580.53
.80	4.40	94.32	6,049.87
.59	36.19	437.39	10.88
97.31	216.79	.80	.86
42.99	.40	691.00	64.12
6.09	91.41	.14	52.34
.69	89.96	19.20	88.19
18.15	2,178.90	6.25	654.21
32322.57	23418.44	29814.09	19041.05

Answers

5	
6	
7	
8	

Correct Position at Machine

JOB No. 29 (Cont'd.)



Use the Touch Method.
Do Not Look at the Keyboard.

JOB No. 29 (Cont'd.)

Name_____

(9)	(10)	(11)	(12)
59.59	3.41	4.45	23.02
1.24	591.37	.79	177.44
939.83	722.28	.75	76.84
509.72	502.48	1,164.65	15.34
7.61	50.98	84.48	310.46
1,035.24	54.86	87.24	50.19
489.77	300.05	.88	1,708.56
82.64	633.56	2,011.74	27.00
.40	576.48	59.05	33.27
302.21	64.67	.63	53.65
37.96	12.56	37.98	2.16
248.14	.11	79.52	46.06
5.81	307.93	930.00	59.52
784.97	26.11	4.26	254.26
9.39	61.32	3.21	8,859.48
3.49	3,804.99	18.29	810.57
215.95	58.13	3,957.03	5.85
2.75	9.27	6.09	47.46
.70	662.81	2,199.59	7.79
88.63	.51	42.71	4,324.89
.50	.07	.10	33.82
36.00	271.09	58.72	33.11
7.64	47.71	864.35	253.77
10.36	6,005.02	9,460.11	8.84
708.49	.484	742.70	.91
4.50	934.92	7,903.92	72.04
509.62	8.53	.85	.26
928.77	.84	84.86	9.80
352.16	96.69	62.35	70.91
122.10	2.30	923.10	.36
7506.18	15815.90	30794.40	17377.63

Answers

9	
10	
11	
12	

(13)	(14)	(15)	(16)
106.19	468.97	6.34	97.85
4,581.62	374.00	4,921.50	10.93
730.54	5,201.21	517.32	1,130.61
7,817.09	67.92	5,287.36	50.24
544.82	4,528.25	7,276.53	1,976.51
7,511.08	4.84	2.85	.95
585.79	8,522.97	56.90	987.50
7.09	.52	3.52	20.64
7,246.03	10.21	1,587.38	3,863.45
3.49	8,573.55	14.36	88.74
24.12	31.00	7,096.20	489.25
5,266.08	710.74	4.40	667.37
80.97	9,116.41	700.09	8,409.71
160.39	51.87	8,908.04	3,795.63
384.27	642.89	690.82	897.59
1,887.36	6,843.69	47.18	2,564.23
401.53	16.80	4,446.35	.60
2,963.55	7,441.03	126.11	1,372.31
597.61	3.32	2,181.63	625.42
5,430.28	855.83	713.68	221.30
83.95	700.23	5,282.97	47.56
.07	79.95	.09	9,684.92
366.94	794.89	885.03	45.13
629.60	9,687.63	6,374.35	4,910.08
4.82	800.15	805.11	90.47
4741.28	65528.89	57936.11	42548.99

Answers

13	
14	
15	
16	

Three-Minute Checkup Results

Number of problems completed	____	Number of wrong answers	____
Gross strokes (Multiply 120 by number of problems completed)	____	Number of correct answers	____
Minutes	3	Net strokes (Multiply 120 by number of correct answers)	____
Gross strokes a minute (Divide gross strokes by 3)	____	Net strokes a minute (Divide net strokes by 3)	____

Three-Minute Checkup

Before proceeding with the Three-Minute Checkup, erase the answers for all problems of the drill.

To complete the Three-Minute Checkup:

a. Do as many problems in the Speed Drill as possible in three minutes.

b. Record each answer in the space provided at the right of the page.

c. At the end of the allotted time use the form at the bottom of this page to calculate the results of the checkup.

d. Record results on the Speed Drill Record, page 115.

Give the completed job to your instructor.

NOTE: Ask your instructor about Job No. 30, which is Test No. 3.

To find the decimal equivalent of a fraction:

Numbers in the heading of the table are numerators (upper number in a fraction).

5 numerator
—
—

Numbers in the left column are denominators (lower number in a fraction).

—
8 denominator

To find the decimal equivalent of 5/8, locate the 5 in the numerator heading of the table. Look down the numerator column to where 5 intersects with 8 in the denominator column. The equivalent of 5/8 is .625.

DECIMAL EQUIVALENTS OF FRACTIONS

Denominators	Numerators 1/—	2/—	3/—	4/—	5/—	6/—	7/—	8/—
—/3	.3333	.6667						
—/4	.25	.5	.75					
—/5	.2	.4	.6	.8				
—/6	.1667	.3333	.5	.6667	.8333			
—/7	.1429	.2857	.4286	.5714	.7143	.8571		
—/8	.125	.25	.375	.5	.625	.75	.875	
—/9	.1111	.2222	.3333	.4444	.5556	.6667	.7778	.8889
—/10	.1	.2	.3	.4	.5	.6	.7	.8
—/11	.0909	.1818	.2727	.3636	.4545	.5455	.6364	.7273
—/12	.0833	.1667	.25	.3333	.4167	.5	.5833	.6667

(109)

CHAIN DISCOUNT NET EQUIVALENTS

Rate %	5	7½	10	12½	15	16⅔	20	22½	25
Net	.95	.925	.90	.875	.85	.83333	.80	.775	.75
2½	.92625	.90188	.8775	.85313	.82875	.8125	.78	.75563	.73125
5	.9025	.87875	.855	.83125	.8075	.79167	.76	.73625	.7125
5 2½	.87994	.85678	.83363	.81047	.78731	.77187	.741	.71784	.69469
5 5	.85738	.83481	.81225	.78969	.76713	.75208	.722	.69944	.67688
5 5 2½	.83594	.81394	.79194	.76995	.74795	.73828	.70395	.68195	.65995
7½	.87875	.85563	.8325	.80938	.78625	.77083	.74	.71688	.69375
7½ 2½	.85678	.83423	.81169	.78914	.76659	.75156	.7215	.69895	.67641
7½ 5	.83481	.81284	.79088	.76891	.74694	.73229	.703	.68103	.65906
10	.855	.8325	.81	.7875	.765	.75	.72	.6975	.675
10 2½	.83363	.81169	.78975	.76781	.74588	.73125	.702	.68006	.65813
10 5	.81225	.79088	.7695	.74813	.72675	.7125	.684	.66263	.64125
10 5 2½	.79194	.7711	.75026	.72942	.70858	.69469	.6669	.64606	.62522
10 7½	.79088	.77006	.74925	.72844	.70763	.69375	.666	.64519	.62438
10 10	.7695	.74925	.729	.70875	.6885	.675	.648	.62775	.6075
10 10 5	.73103	.71179	.69255	.67331	.65408	.64125	.6156	.59636	.57713
10 10 5 2½	.71275	.69399	.67524	.65648	.63772	.62522	.60021	.58145	.5627
10 10 10	.69255	.67433	.6561	.63788	.61965	.6075	.5832	.56498	.54675
10 10 10 10	.62330	.60689	.59049	.57409	.55769	.54675	.52488	.50848	.49208
10 10 10 10 10	.56097	.54620	.53144	.51668	.50192	.49208	.47239	.45763	.44287

Rate %	27½	30	32½	33⅓	35	37½	40	42½	45
Net	.725	.70	.675	.66667	.65	.625	.60	.575	.55
2½	.70688	.6825	.65813	.65	.63375	.60938	.585	.56063	.53625
5	.68875	.665	.64125	.63333	.6175	.59375	.57	.54625	.5225
5 2½	.67153	.64838	.62522	.6175	.60206	.57891	.55575	.53259	.50944
5 5	.65431	.63175	.60919	.60167	.58663	.56406	.5415	.51894	.49638
5 5 2½	.63795	.61596	.59396	.58663	.57196	.54996	.52796	.50596	.48397
7½	.67063	.6475	.62438	.61667	.60125	.57813	.555	.53188	.50875
7½ 2½	.65386	.63131	.60877	.60125	.58622	.56367	.54113	.51858	.49608
7½ 5	.63709	.61513	.59316	.58583	.57119	.54922	.52725	.50528	.48331
10	.6525	.63	.6075	.6	.585	.5625	.54	.5175	.495
10 2½	.63619	.61425	.59231	.585	.57038	.54844	.5265	.50456	.48263
10 5	.61988	.5985	.57713	.57	.55575	.53438	.513	.49163	.47025
10 5 2½	.60438	.58354	.56270	.55575	.54186	.52102	.50018	.47933	.45849
10 7½	.60356	.58275	.56194	.555	.54113	.52031	.4995	.47869	.45788
10 10	.58725	.567	.54675	.54	.5265	.50625	.486	.46575	.4455
10 10 5	.55789	.53865	.51941	.513	.50018	.48094	.4617	.44246	.42323
10 10 5 2½	.54394	.52518	.50643	.50018	.48767	.46891	.45016	.4314	.41264
10 10 10	.52853	.5103	.49208	.486	.47385	.45563	.4374	.41918	.40095
10 10 10 10	.47567	.45927	.44287	.4374	.42647	.41006	.39366	.37726	.36086
10 10 10 10 10	.42811	.41334	.39858	.39366	.38382	.36906	.35429	.33953	.32477

To complete a problem using the Chain Discount Net Equivalents table.

Example: $43.25 less 15%–10%–5%

1. Locate the column headed 15%.
2. Glance down this column to the equivalent opposite 10-5 in the extreme left column. The net decimal equivalent is .72675.
3. Multiply .72675 by $43.25. The net amount is $31.43.

CHAIN DISCOUNT NET EQUIVALENTS (Continued)

Rate %	47½	50	52½	55	57½	60	62½	65	66⅔
Net	.525	.50	.475	.45	.425	.40	.375	.35	.33333
2½	.51188	.4875	.46313	.43875	.41438	.39	.36563	.34125	.325
5	.49875	.475	.45125	.4275	.40375	.38	.35625	.3325	.31666
5 2½	.48628	.46313	.43997	.41681	.39366	.3705	.34734	.32419	.30875
5 5	.47381	.45125	.42869	.40613	.38356	.361	.33844	.31588	.30083
5 5 2½	.46197	.43997	.41797	.39597	.37397	.35198	.32998	.30798	.29331
7½	.48563	.4625	.43938	.41625	.39313	.37	.34688	.32375	.30833
7½ 2½	.47348	.45094	.42839	.40584	.3833	.36075	.3382	.31566	.30062
7½ 5	.46134	.43938	.41741	.39544	.37347	.3515	.32953	.30756	.29292
10	.4725	.45	.4275	.405	.3825	.36	.3375	.315	.3
10 2½	.46069	.43875	.41681	.39488	.37294	.351	.32906	.30713	.2925
10 5	.44888	.4275	.40613	.38475	.36338	.342	.32063	.29925	.285
10 5 2½	.43765	.41681	.39597	.37513	.35429	.33345	.31261	.29177	.27788
10 7½	.43706	.41625	.39544	.37463	.35381	.333	.31219	.29138	.2775
10 10	.42525	.405	.38475	.3645	.34425	.324	.30375	.2835	.27
10 10 5	.40399	.38475	.36551	.34628	.32704	.3078	.28856	.26933	.2565
10 10 5 2½	.39389	.37513	.35637	.33762	.31886	.30011	.28135	.26259	.25009
10 10 10	.38273	.3645	.34628	.32805	.30983	.2916	.27338	.25515	.243
10 10 10 10	.34445	.32805	.31165	.29525	.27884	.26244	.24604	.22964	.2187
10 10 10 10 10	.31001	.29525	.28048	.26572	.25096	.23620	.22143	.20667	.19683

Rate %	70	72½	75	77½	80	82½	85	87½	90
Net	.30	.275	.25	.225	.20	.175	.15	.125	.10
2½	.2925	.26813	.24375	.21938	.195	.17063	.14625	.12188	.0975
5	.285	.26125	.2375	.21375	.19	.16625	.1425	.11875	.095
5 2½	.27788	.25472	.23156	.20841	.18525	.16209	.13894	.11578	.09263
5 5	.27075	.24819	.22563	.20306	.1805	.15794	.13538	.11281	.09025
5 5 2½	.26398	.24198	.21998	.19799	.17599	.15399	.13199	.10999	.08799
7½	.2775	.25438	.23125	.20813	.185	.16188	.13875	.11563	.0925
7½ 2½	.27056	.24802	.22547	.20292	.18038	.15783	.13528	.11273	.09019
7½ 5	.26363	.24166	.21969	.19772	.17575	.15378	.13181	.10984	.08788
10	.27	.2475	.225	.2025	.18	.1575	.135	.1125	.09
10 2½	.26325	.24131	.21938	.19744	.1755	.15356	.13163	.10969	.08775
10 5	.2565	.23513	.21375	.19238	.171	.14963	.12825	.10688	.0855
10 5 2½	.25009	.22925	.20841	.18757	.16673	.14588	.12504	.1042	.08336
10 7½	.24975	.22894	.20813	.18731	.1665	.14569	.12488	.10406	.08325
10 10	.243	.22275	.2025	.18225	.162	.14175	.1215	.10125	.081
10 10 5	.23085	.21161	.19238	.17314	.1539	.13466	.11543	.09619	.07695
10 10 5 2½	.22508	.20632	.18757	.16881	.15005	.1313	.11254	.09378	.07503
10 10 10	.2187	.20048	.18225	.16403	.1458	.12758	.10935	.09113	.0729
10 10 10 10	.19683	.18043	.16403	.14762	.13122	.11482	.09842	.08201	.06561
10 10 10 10 10	.17715	.16238	.14762	.13286	.11810	.10334	.08857	.07381	.05905

(111)

DECIMAL RECIPROCALS

The reciprocals in this table were determined by dividing each number into 1.0. To find the reciprocal of a decimal, find the reciprocal as if the decimal were a whole number, and then move the decimal point in the reciprocal as many places to the right as there are places in the decimal for which the reciprocal is desired. For example, the reciprocal of .04 is 25; that for .125 is 8; that for 7.25 is .1379.

1	1.000000	41	.024390	81	.012346	101	.009901	141	.007092	161	.006211	201	.004975	221	.004525
2	.500000	42	.023810	82	.012195	102	.009804	142	.007042	162	.006173	202	.004950	222	.004505
3	.333333	43	.023256	83	.012048	103	.009709	143	.006993	163	.006135	203	.004926	223	.004484
4	.250000	44	.022727	84	.011905	104	.009615	144	.006944	164	.006098	204	.004902	224	.004464
5	.200000	45	.022222	85	.011765	105	.009524	145	.006897	165	.006061	205	.004878	225	.004444
6	.166667	46	.021739	86	.011628	106	.009434	146	.006849	166	.006024	206	.004854	226	.004425
7	.142857	47	.021277	87	.011494	107	.009346	147	.006803	167	.005988	207	.004831	227	.004405
8	.125000	48	.020833	88	.011364	108	.009259	148	.006757	168	.005952	208	.004808	228	.004386
9	.111111	49	.020408	89	.011236	109	.009174	149	.006711	169	.005917	209	.004785	229	.004367
10	.100000	50	.020000	90	.011111	110	.009091	150	.006667	170	.005882	210	.004762	230	.004348
11	.090909	51	.019608	91	.010989	111	.009009	151	.006623	171	.005848	211	.004739	231	.004329
12	.083333	52	.019231	92	.010870	112	.008929	152	.006579	172	.005814	212	.004717	232	.004310
13	.076923	53	.018868	93	.010753	113	.008850	153	.006536	173	.005780	213	.004695	233	.004292
14	.071429	54	.018519	94	.010638	114	.008772	154	.006494	174	.005747	214	.004673	234	.004274
15	.066667	55	.018182	95	.010526	115	.008696	155	.006452	175	.005714	215	.004651	235	.004255
16	.062500	56	.017857	96	.010417	116	.008621	156	.006410	176	.005682	216	.004630	236	.004237
17	.058824	57	.017544	97	.010309	117	.008547	157	.006369	177	.005650	217	.004608	237	.004219
18	.055556	58	.017241	98	.010204	118	.008475	158	.006329	178	.005618	218	.004587	238	.004202
19	.052632	59	.016949	99	.010101	119	.008403	159	.006289	179	.005587	219	.004566	239	.004184
20	.050000	60	.016667	100	.010000	120	.008333	160	.006250	180	.005556	220	.004545	240	.004167
21	.047619	61	.016393	121	.008264	181	.005525	241	.004149	301	.003322	361	.002770	421	.002375
22	.045455	62	.016129	122	.008197	182	.005495	242	.004132	302	.003311	362	.002762	422	.002370
23	.043478	63	.015873	123	.008130	183	.005464	243	.004115	303	.003300	363	.002755	423	.002364
24	.041667	64	.015625	124	.008065	184	.005435	244	.004098	304	.003289	364	.002747	424	.002358
25	.040000	65	.015385	125	.008000	185	.005405	245	.004082	305	.003279	365	.002740	425	.002353
26	.038462	66	.015152	126	.007937	186	.005376	246	.004065	306	.003268	366	.002732	426	.002347
27	.037037	67	.014925	127	.007874	187	.005347	247	.004049	307	.003257	367	.002725	427	.002342
28	.035714	68	.014706	128	.007813	188	.005319	248	.004032	308	.003247	368	.002717	428	.002336
29	.034483	69	.014493	129	.007752	189	.005291	249	.004016	309	.003236	369	.002710	429	.002331
30	.033333	70	.014286	130	.007692	190	.005263	250	.004000	310	.003226	370	.002703	430	.002326
31	.032258	71	.014085	131	.007634	191	.005236	251	.003984	311	.003215	371	.002695	431	.002320
32	.031250	72	.013889	132	.007576	192	.005208	252	.003968	312	.003205	372	.002688	432	.002315
33	.030303	73	.013699	133	.007519	193	.005181	253	.003953	313	.003195	373	.002681	433	.002309
34	.029412	74	.013514	134	.007463	194	.005155	254	.003937	314	.003185	374	.002674	434	.002304
35	.028571	75	.013333	135	.007407	195	.005128	255	.003922	315	.003175	375	.002667	435	.002299
36	.027778	76	.013158	136	.007353	196	.005102	256	.003906	316	.003165	376	.002660	436	.002294
37	.027027	77	.012987	137	.007299	197	.005076	257	.003891	317	.003155	377	.002653	437	.002288
38	.026316	78	.012821	138	.007246	198	.005051	258	.003876	318	.003145	378	.002646	438	.002283
39	.025641	79	.012658	139	.007194	199	.005025	259	.003861	319	.003135	379	.002639	439	.002278
40	.025000	80	.012500	140	.007143	200	.005000	260	.003846	320	.003125	380	.002632	440	.002273

441	.002268	481	.002079	521	.001919	561	.001783	601	.001664	641	.001560	681	.001468	721	.001387
442	.002262	482	.002075	522	.001916	562	.001779	602	.001661	642	.001558	682	.001466	722	.001385
443	.002257	483	.002070	523	.001912	563	.001776	603	.001658	643	.001555	683	.001464	723	.001383
444	.002252	484	.002066	524	.001908	564	.001773	604	.001656	644	.001553	684	.001462	724	.001381
445	.002247	485	.002062	525	.001905	565	.001770	605	.001653	645	.001550	685	.001460	725	.001379
446	.002242	486	.002058	526	.001901	566	.001767	606	.001650	646	.001548	686	.001458	726	.001377
447	.002237	487	.002053	527	.001898	567	.001764	607	.001647	647	.001545	687	.001456	727	.001376
448	.002232	488	.002049	528	.001894	568	.001761	608	.001645	648	.001543	688	.001453	728	.001374
449	.002227	489	.002045	529	.001890	569	.001757	609	.001642	649	.001540	689	.001451	729	.001372
450	.002222	490	.002041	530	.001887	570	.001754	610	.001639	650	.001538	690	.001449	730	.001370
451	.002217	491	.002037	531	.001883	571	.001751	611	.001637	651	.001536	691	.001447	731	.001368
452	.002212	492	.002033	532	.001880	572	.001748	612	.001634	652	.001533	692	.001445	732	.001366
453	.002208	493	.002028	533	.001876	573	.001745	613	.001632	653	.001531	693	.001443	733	.001365
454	.002203	494	.002024	534	.001873	574	.001742	614	.001629	654	.001529	694	.001441	734	.001363
455	.002198	495	.002020	535	.001869	575	.001739	615	.001626	655	.001527	695	.001439	735	.001361
456	.002193	496	.002016	536	.001866	576	.001736	616	.001624	656	.001524	696	.001437	736	.001359
457	.002188	497	.002012	537	.001862	577	.001733	617	.001621	657	.001522	697	.001435	737	.001357
458	.002183	498	.002008	538	.001859	578	.001730	618	.001618	658	.001520	698	.001433	738	.001355
459	.002179	499	.002004	539	.001855	579	.001727	619	.001616	659	.001517	699	.001431	739	.001353
460	.002174	500	.002000	540	.001852	580	.001724	620	.001613	660	.001515	700	.001429	740	.001351

(continued)

DECIMAL RECIPROCALS (Continued)

501	.001996	561	.001788	621	.001610	681	.001468	741	.001350	801	.001248	861	.001161	921	.001086	981	.001019
502	.001992	562	.001779	622	.001608	682	.001466	742	.001348	802	.001247	862	.001160	922	.001085	982	.001018
503	.001988	563	.001776	623	.001605	683	.001464	743	.001346	803	.001245	863	.001159	923	.001083	983	.001017
504	.001984	564	.001773	624	.001603	684	.001462	744	.001344	804	.001244	864	.001157	924	.001082	984	.001016
505	.001980	565	.001770	625	.001600	685	.001460	745	.001342	805	.001242	865	.001156	925	.001081	985	.001016
506	.001976	566	.001767	626	.001597	686	.001458	746	.001340	806	.001241	866	.001155	926	.001080	986	.001014
507	.001972	567	.001764	627	.001595	687	.001456	747	.001339	807	.001239	867	.001153	927	.001079	987	.001013
508	.001969	568	.001761	628	.001592	688	.001453	748	.001337	808	.001238	868	.001152	928	.001078	988	.001012
509	.001965	569	.001757	629	.001590	689	.001451	749	.001335	809	.001236	869	.001151	929	.001076	989	.001011
510	.001961	570	.001754	630	.001587	690	.001449	750	.001333	810	.001235	870	.001149	930	.001075	990	.001010
511	.001957	571	.001751	631	.001585	691	.001447	751	.001332	811	.001233	871	.001148	931	.001074	991	.001009
512	.001953	572	.001748	632	.001582	692	.001445	752	.001330	812	.001232	872	.001147	932	.001073	992	.001008
513	.001949	573	.001745	633	.001580	693	.001443	753	.001328	813	.001230	873	.001145	933	.001072	993	.001007
514	.001946	574	.001742	634	.001577	694	.001441	754	.001326	814	.001229	874	.001144	934	.001071	994	.001006
515	.001942	575	.001739	635	.001575	695	.001439	755	.001325	815	.001227	875	.001143	935	.001070	995	.001005
516	.001938	576	.001736	636	.001572	696	.001437	756	.001323	816	.001225	876	.001142	936	.001068	996	.001004
517	.001934	577	.001733	637	.001570	697	.001435	757	.001321	817	.001224	877	.001140	937	.001067	997	.001003
518	.001931	578	.001730	638	.001567	698	.001433	758	.001319	818	.001222	878	.001139	938	.001066	998	.001002
519	.001927	579	.001727	639	.001565	699	.001431	759	.001318	819	.001221	879	.001138	939	.001065	999	.001001
520	.001923	580	.001724	640	.001563	700	.001429	760	.001316	820	.001220	880	.001136	940	.001064	1000	.001000
521	.001919	581	.001721	641	.001560	701	.001427	761	.001314	821	.001218	881	.001135	941	.001063		
522	.001916	582	.001718	642	.001558	702	.001425	762	.001312	822	.001217	882	.001134	942	.001062		
523	.001912	583	.001715	643	.001555	703	.001422	763	.001311	823	.001215	883	.001133	943	.001060		
524	.001908	584	.001712	644	.001553	704	.001420	764	.001309	824	.001214	884	.001131	944	.001059		
525	.001905	585	.001709	645	.001550	705	.001418	765	.001307	825	.001212	885	.001130	945	.001058		
526	.001901	586	.001706	646	.001548	706	.001416	766	.001305	826	.001211	886	.001129	946	.001057		
527	.001898	587	.001704	647	.001546	707	.001414	767	.001304	827	.001209	887	.001127	947	.001056		
528	.001894	588	.001701	648	.001543	708	.001412	768	.001302	828	.001208	888	.001126	948	.001055		
529	.001890	589	.001698	649	.001541	709	.001410	769	.001300	829	.001206	889	.001125	949	.001054		
530	.001887	590	.001695	650	.001538	710	.001408	770	.001299	830	.001205	890	.001124	950	.001053		
531	.001883	591	.001692	651	.001536	711	.001406	771	.001297	831	.001203	891	.001122	951	.001052		
532	.001880	592	.001689	652	.001534	712	.001404	772	.001295	832	.001202	892	.001121	952	.001050		
533	.001876	593	.001686	653	.001531	713	.001403	773	.001294	833	.001200	893	.001120	953	.001049		
534	.001878	594	.001684	654	.001529	714	.001401	774	.001292	834	.001199	894	.001119	954	.001048		
535	.001869	595	.001681	655	.001527	715	.001399	775	.001290	835	.001198	895	.001117	955	.001047		
536	.001866	596	.001678	656	.001524	716	.001397	776	.001289	836	.001196	896	.001116	956	.001046		
537	.001862	597	.001675	657	.001522	717	.001395	777	.001287	837	.001195	897	.001115	957	.001045		
538	.001859	598	.001672	658	.001520	718	.001393	778	.001285	838	.001193	898	.001114	958	.001044		
539	.001855	599	.001669	659	.001517	719	.001391	779	.001284	839	.001192	899	.001112	959	.001043		
540	.001852	600	.001667	660	.001515	720	.001389	780	.001282	840	.001190	900	.001111	960	.001042		
541	.001848	601	.001664	661	.001513	721	.001387	781	.001280	841	.001189	901	.001110	961	.001041		
542	.001845	602	.001661	662	.001511	722	.001385	782	.001279	842	.001188	902	.001109	962	.001040		
543	.001842	603	.001658	663	.001508	723	.001383	783	.001277	843	.001186	903	.001107	963	.001038		
544	.001838	604	.001656	664	.001506	724	.001381	784	.001276	844	.001185	904	.001106	964	.001037		
545	.001835	605	.001653	665	.001504	725	.001379	785	.001274	845	.001183	905	.001105	965	.001036		
546	.001832	606	.001650	666	.001502	726	.001377	786	.001272	846	.001182	906	.001104	966	.001035		
547	.001828	607	.001647	667	.001499	727	.001376	787	.001271	847	.001181	907	.001103	967	.001034		
548	.001825	608	.001645	668	.001497	728	.001374	788	.001269	848	.001179	908	.001101	968	.001033		
549	.001821	609	.001642	669	.001495	729	.001372	789	.001267	849	.001178	909	.001100	969	.001032		
550	.001818	610	.001639	670	.001493	730	.001370	790	.001266	850	.001176	910	.001099	970	.001031		
551	.001815	611	.001637	671	.001490	731	.001368	791	.001264	851	.001175	911	.001098	971	.001030		
552	.001812	612	.001634	672	.001488	732	.001366	792	.001263	852	.001174	912	.001096	972	.001029		
553	.001808	613	.001631	673	.001486	733	.001364	793	.001261	853	.001172	913	.001095	973	.001028		
554	.001805	614	.001629	674	.001484	734	.001362	794	.001259	854	.001171	914	.001094	974	.001027		
555	.001802	615	.001626	675	.001481	735	.001361	795	.001258	855	.001170	915	.001093	975	.001026		
556	.001799	616	.001623	676	.001479	736	.001359	796	.001256	856	.001168	916	.001092	976	.001025		
557	.001795	617	.001621	677	.001477	737	.001357	797	.001255	857	.001167	917	.001091	977	.001024		
558	.001792	618	.001618	678	.001475	738	.001355	798	.001253	858	.001166	918	.001089	978	.001022		
559	.001789	619	.001616	679	.001473	739	.001353	799	.001252	859	.001164	919	.001088	979	.001021		
560	.001786	620	.001613	680	.001471	740	.001351	800	.001250	860	.001163	920	.001087	980	.001020		

INTEREST DIVISORS — 360-Day Basis

%	INTEREST RATE							%
	0%	1%	2%	3%	4%	5%	6%	
		36000.	18000.	12000.	9000.	7200.	6000.	
1/16	576000.	33882.35	17454.55	11755.10	8861.54	7111.11	5938.14	1/16
1/8	288000.	32000.	16941.18	11520.	8727.27	7024.39	5877.55	1/8
3/16	192000.	30315.79	16457.14	11294.12	8597.01	6939.76	5818.18	3/16
1/4	144000.	28800.	16000.	11076.92	8470.59	6857.14	5760.	1/4
5/16	115200.	27428.57	15567.57	10867.92	8347.83	6776.47	5702.97	5/16
3/8	96000.	26181.82	15157.89	10666.67	8228.57	6697.67	5647.06	3/8
7/16	82285.71	25043.48	14769.23	10472.73	8112.68	6620.69	5592.23	7/16
1/2	72000.	24000.	14400.	10285.71	8000.	6545.45	5538.46	1/2
9/16	64000.	23040.	14048.78	10105.26	7890.41	6471.91	5485.71	9/16
5/8	57600.	22153.85	13714.29	9931.03	7783.78	6400.	5433.96	5/8
11/16	52363.63	21333.33	13395.35	9762.71	7680.	6329.67	5383.18	11/16
3/4	48000.	20571.43	13090.91	9600.	7578.95	6260.87	5333.33	3/4
13/16	44307.69	19862.07	12800.	9442.62	7480.52	6193.55	5284.40	13/16
7/8	41142.86	19200.	12521.74	9290.32	7384.62	6127.66	5236.36	7/8
15/16	38400.	18580.65	12255.32	9142.86	7291.14	6063.16	5189.19	15/16

To complete problems using the Interest Divisor Table:

Example: $3,280 for 64 days @ 2½%

1. Multiply $3,280 by 64 to get 209,920.
2. Locate the column headed 2% in the Interest Divisors Table.
3. Glance down the column to the interest divisor opposite ½ in the extreme left column. The interest divisor is 14,400.
4. Divide 209,920 by 14,400. The interest is $14.58.

(114)

PROGRESS RECORD

Name_____

Class_____ Term_____ Year_____

WARM-UP DRILL RECORD

Drill A, page 10
Addition

Date	Strokes

Drill B, page 27
Subtraction

Date	Strokes

Drill C, page 47
Addition

Date	Strokes

Drill D, page 59
Subtraction

Date	Strokes

Drill E, page 83
Addition, handwritten

Date	Strokes

Drill F, page 87
Subtraction, handwritten

Date	Strokes

SPEED DRILL RECORD

Job No.	Date	Gross Strokes	Gross Strokes a Minute	Net Strokes	Net Strokes a Minute
5					
9					
15					
19					
25					
29					

ANSWER SHEET—CALCULATOR PROBLEMS

STUDENT'S NAME _____ LESSON NO. _____

PROBLEMS WORKED _____ NUMBER ERRORS _____ NUMBER CORRECT _____

DATE _____ TIME _____ GRADE _____

1		26	
2		27	
3		28	
4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
10		35	
11		36	
12		37	
13		38	
14		39	
15		40	
16		41	
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19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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ANSWER SHEET—CALCULATOR PROBLEMS

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1		26	
2		27	
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4		29	
5		30	
6		31	
7		32	
8		33	
9		34	
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15		40	
16		41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24		49	
25		50	

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